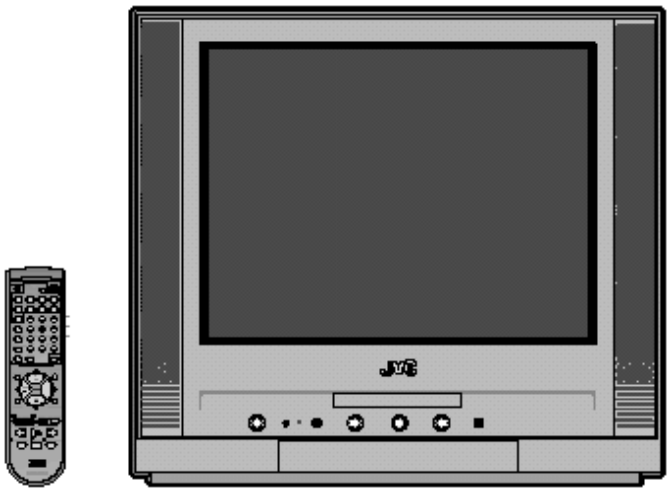
JVC

SERVICE MANUAL

TV/DVD COMBO

AV-20FD22



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No. 51821
Mar. 2001

SPECIFICATIONS

GENERAL

Power supply:	AC 120V 60Hz
Power consumption:	Operation: 120W
	Stand by: 8W
Weight:	56.1lbs (25.5 kg)
Dimensions:	Width : 22-5/8 inches (574 mm)
	Height: 20-3/8 inches (515 mm)
	Depth : 19-1/8 inches (483 mm)

TELEVISION

Picture tube:	Type 20 (508 mm diagonal)
Tuner type:	Quartz PLL Frequency Synthesized
Receiving channels:	VHF 2-13
	UHF 14-69
	CATV 14-36 (A)-(W)
	37-59 (AA)-(WW)
	60-85 (AAA)-(ZZZ)
	86-94 (86)-(94)
	95-99 (A-5)-(A-1)
	100-125 (100)-(125)
	01 (5A)
Antenna input:	VHF/UHF In 75 ohm coaxial
Speaker:	3" (76 mm), 8 ohm x 2
Audio output power:	2.5W + 2.5W

DVD/CD player

Signal system:	NTSC
Applicable disc:	1. DVD (12cm, 8cm)
	2. CD (12cm, 8cm)
Audio characteristics:	DVD: 4Hz - 22KHz
Frequency response:	CD: 4Hz - 20KHz
S/N Ratio:	90dB
Harmonic distortion:	0.01%
Wow and flutter:	Below Measurable Level
Dynamic range:	96dB
Input/Output:	Inputs : Video : (RCA) 1 Vp-p/75ohm
	Audio : (RCA) –8 dB/50Kohm
	Outputs : Video : (RCA) 1 Vp-p/75ohm
	Audio : (RCA) –8 dB/1Kohm
Headphone Jack:	3.5mm Stereo mini-jack
Digital audio out:	0.5Vp-p 75ohms terminated
Pickup:	CD : Wavelength: 775 - 815 nm
	Maximum output power: 0.5 mW
	DVD : Wavelength: 650 - 666 nm
	Maximum output power: 2.0 mW

Accessories:

Remote control x 1

Batteries (2 x AA)

Design & specification are subject to change without notice.

SAFTY PRECAUITONS

CAUTION

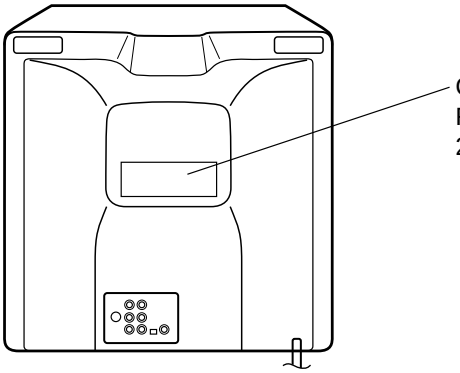
THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS SERVICE MANUAL CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

Location of the required Marking
The rating sheet and the safety caution are on the rear of the unit.



IMPORTANT SERVICE SAFETY INFORMATION

Operating the receiver outside of its cabinet or with its back removed involves a shock hazard. Work on these models should only be performed by those who are thoroughly familiar with precautions necessary when working on high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B plus and high voltage RF terminals are exposed which, if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis, escutcheon, picture tube dag and tuner cluster when operating the chassis.

These receivers have a "polarized" AC line cord. The AC plug is designed to fit into standard AC outlets in one direction only. The wide blade connects to the "ground side" and the narrow blade connects to the "hot side" of the AC line. This assures that the TV receiver is properly grounded to the house wiring. If an extension cord must be used, make sure it is of the "polarized" type.

Since the chassis of this receiver is connected to one side of the AC supply during operation, service should not be attempted by anyone not familiar with the precautions necessary when working on these types of equipment.

When it is necessary to make measurements or tests with AC power applied to the receiver chassis, an Isolation Transformer must be used as a safety precaution and to prevent possible damage to transistors. The Isolation Transformer should be connected between the TV line cord plug and the AC power outlet.

Certain HV failures can increase X-ray radiation. Receivers should not be operated with HV levels exceeding the specified rating for their chassis type. The maximum operating HV specified for the chassis used in these receivers is 32kV±1.0kV at zero beam current with a line voltage of 120V AC. Higher voltage may also increase the possibility of failure in the HV supply.

It is important to maintain specified values of all components in the horizontal and high voltage circuits and anywhere else in the receiver that could cause a rise in high voltage, or operating supply voltages. No changes should be made to the original design of the receiver.

Components shown in the shaded areas on the schematic diagram and/or identified by ⚠ in the replacement parts list should be replaced only with exact factory recommended replacement parts. The use of unauthorized substitute parts may create shock, fire, X-ray radiation, or other hazards.

To determine the presence of high voltage, use an accurate high impedance HV meter connected between the second anode lead and the CRT dag grounding device. When servicing the High Voltage System, remove static charges from it by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube dag and 2nd anode lead (have AC line cord disconnected from AC supply).

The picture tube used in this receiver employs integral implosion protection. Replace with a tube of the same type number for continued safety. Do not lift picture tube by the neck. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely. Keep others without shatterproof goggles away.

When removing springs or spring mounted parts from the tuner, tuner cluster or chassis, shatterproof goggles must be worn. Keep others without shatterproof goggles away.

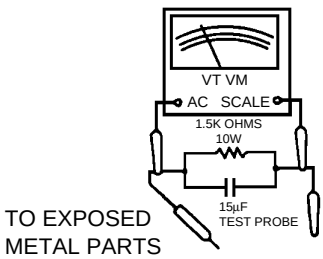
Before returning the receiver to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Replace all protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (antenna, cabinet metal, screw heads, knobs and/or shafts, escutcheon, etc.) in the following manner.

Plug the AC line cord directly into a 120V AC receptacle. (Do not use an Isolation Transformer during these checks.) All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a nonpolarized adapter plug must be used only for the purpose of completing these checks.)

If available, measure current using an accurate leakage current tester. Any reading of 0.35mA or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.

If a reliable leakage current tester is not available, this alternate method of measurement should be used. Using two clip leads, connect a 1500 ohm, 10 watt resistor paralleled by a 0.15µF capacitor in series with a known earth ground, such as a water pipe or conduit and the metal part to be checked. Use a VTVM or VOM with 1000 ohms per volt, or higher, sensitivity to measure this AC voltage drop across the resistor. Any reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.



IMPORTANT SAFEGUARDS

1. **READ INSTRUCTIONS**
   All the safety and operating instructions should be read before the unit is operated.
2. **RETAIN INSTRUCTIONS**
   The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS**
   All warnings on the unit and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS**
   All operating and use instructions should be followed.
5. **CLEANING**
   Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6. **ATTACHMENTS**
   Do not use attachments not recommended by the unit's manufacturer as they may cause hazards.
7. **WATER AND MOISTURE**
   Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
8. **ACCESSORIES**
   Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer.

PORTABLE CART WARNING
(symbol provided by RETAC)

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8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. **VENTILATION**
   Slots and openings in the cabinet and in the back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
10. **POWER SOURCES**
    This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.
11. **GROUNDING OR POLARIZATION**
    This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. If your unit is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin, this plug will only fit into a grounding-type power outlet. This too, is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
12. **POWER-CORD PROTECTION**
    Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. **LIGHTNING**
    To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.
14. **POWER LINES**
    An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.
15. **OVERLOADING**
    Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.
16. **OBJECT AND LIQUID ENTRY**
    Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.
17. **OUTDOOR ANTENNA GROUNDING**
    If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
18. **SERVICING**
    Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

IMPORTANT SAFEGUARDS (CONTINUED)

19. DAMAGE REQUIRING SERVICE

Unplug this unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a. When the power-supply cord or plug is damaged.
b. If liquid has been spilled, or objects have fallen into the unit.
c. If the unit has been exposed to rain or water.
d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
e. If the unit has been dropped or the cabinet has been damaged.
f. When the unit exhibits a distinct change in performance, this indicates a need for service.

20. REPLACEMENT PARTS

When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original parts.
Unauthorized substitutions may result in fire, electric shock or other hazards.

21. SAFETY CHECK

Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.

22. WALL OR CEILING MOUNTING

The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

23. HEAT

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

24. DISC TRAY

Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.

25. CONNECTING

When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause an electric shock and serious personal injury. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

26. SOUND VOLUME

Reduce the volume to the minimum level before you turn on the product. Otherwise, sudden high volume sound may cause hearing or speaker damage.

27. SOUND DISTORTION

Do not allow the product output distorted sound for a longtime. It may cause speaker overheating and fire.

28. HEADPHONES

When you use the headphones, keep the volume at a moderate level. If you use the headphones continuously with high volume sound, it may cause hearing damage.

29. LEASER BEAM

Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.

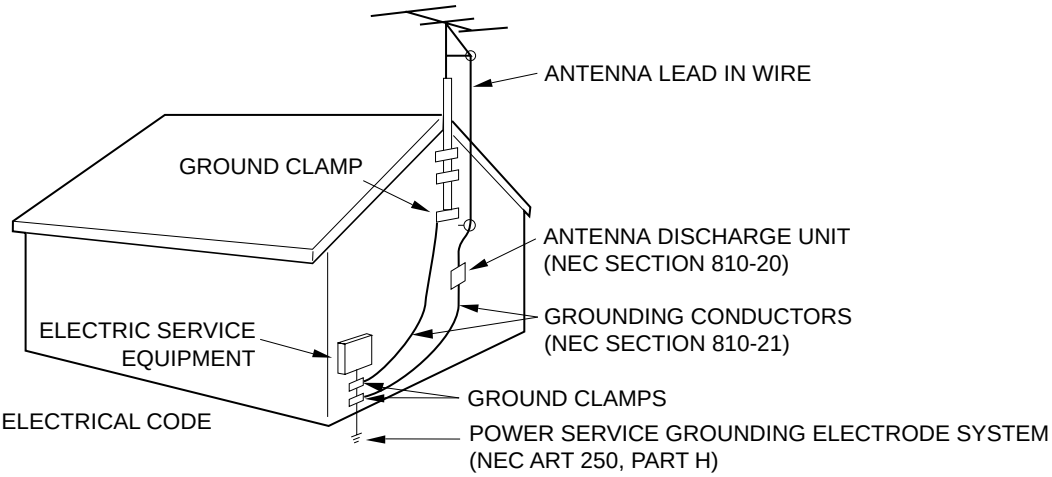
30. DISC

Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.

31. NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE



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SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 6 screws ①.
2. Remove the 2 screws ② which are used for holding the Back Cabinet.
3. Remove the AC cord from the AC cord hook ③.
4. Remove the Back Cabinet in the direction of arrow.

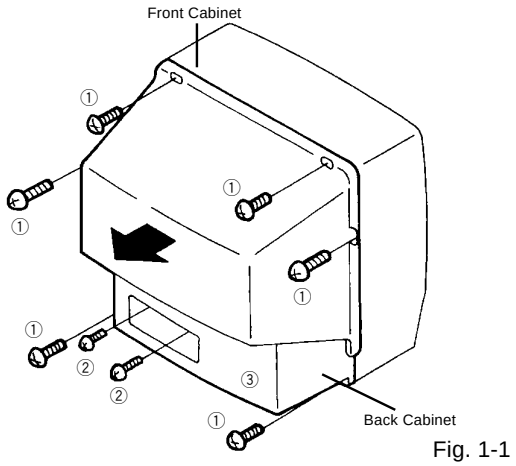


Fig. 1-1

1-2: CRT PCB (Refer to Fig. 1-2)

CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1. Remove the Anode Cap. (Refer to REMOVAL OF ANODE CAP)
2. Disconnect the following connectors: (CP801 and CP850B).
3. Remove the CRT PCB in the direction of arrow.

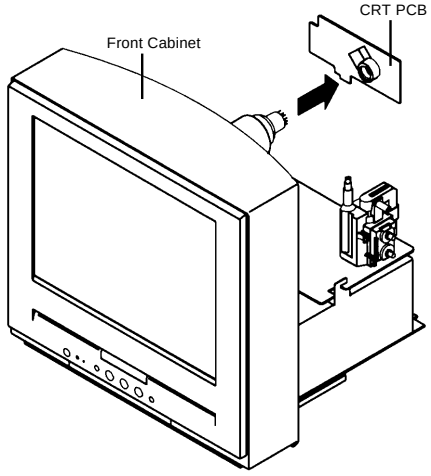


Fig. 1-2

1-3: TV/DVD BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors: (CP104, CP301, CP302, CP401 and CP502).
3. Remove the TV/DVD Block in the direction of arrow.

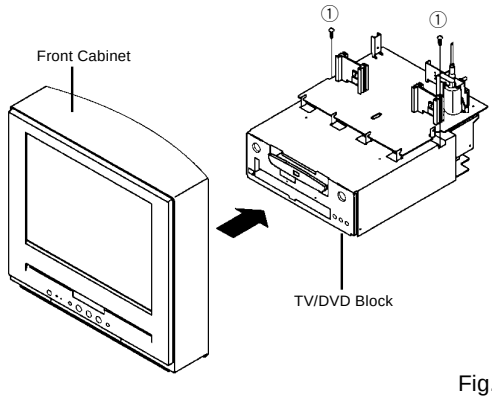


Fig. 1-3

1-4: MAIN PCB (Refer to Fig. 1-4)

1. Remove the 2 screws ①.
2. Remove the 3 screws ②.
3. Disconnect the following connectors: (CP403, CP810B, CP820B and CP811).
4. Remove the Main PCB in the direction of arrow.

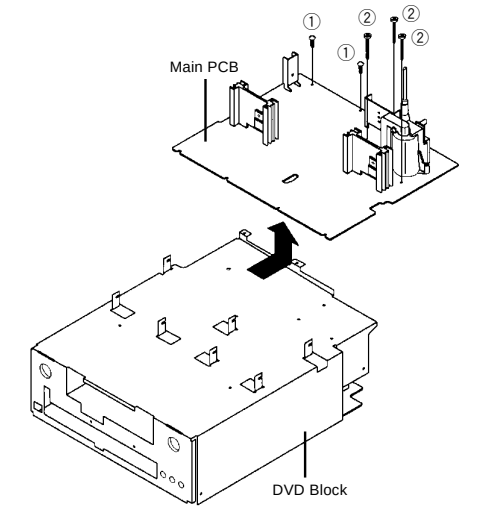


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

1-5: FRONT TRAY PLATE/TOP SHIELD
(Refer to Fig. 1-5)

1. Remove the Front Tray Plate in the direction of arrow (A).
2. Remove the 9 screws ①.
3. Remove the Top Shield in the direction of arrow (B).

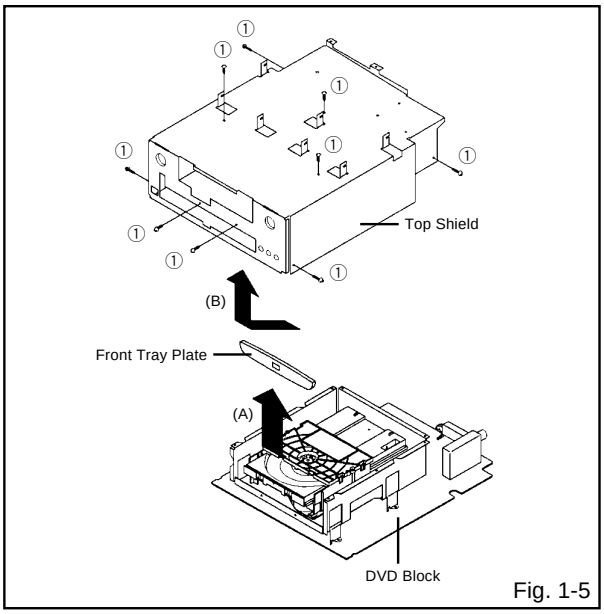


Fig. 1-5

1-6: AV PCB/SYSCON PCB/CD DECK (Refer to Fig. 1-6)

1. Remove the 3 screws ①.
2. Remove the AV PCB in the direction of arrow (A).
3. Remove the 4 screws ②.
4. Remove the Angle Deck in the direction of arrow (B).
5. Disconnect the following connectors:
   (CP4001 and CP4002).
6. Remove the 4 screws ③.
7. Remove the CD Deck in the direction of arrow (C).
8. Remove the 4 screws ④.
9. Remove the Syscon PCB in the direction of arrow (D).

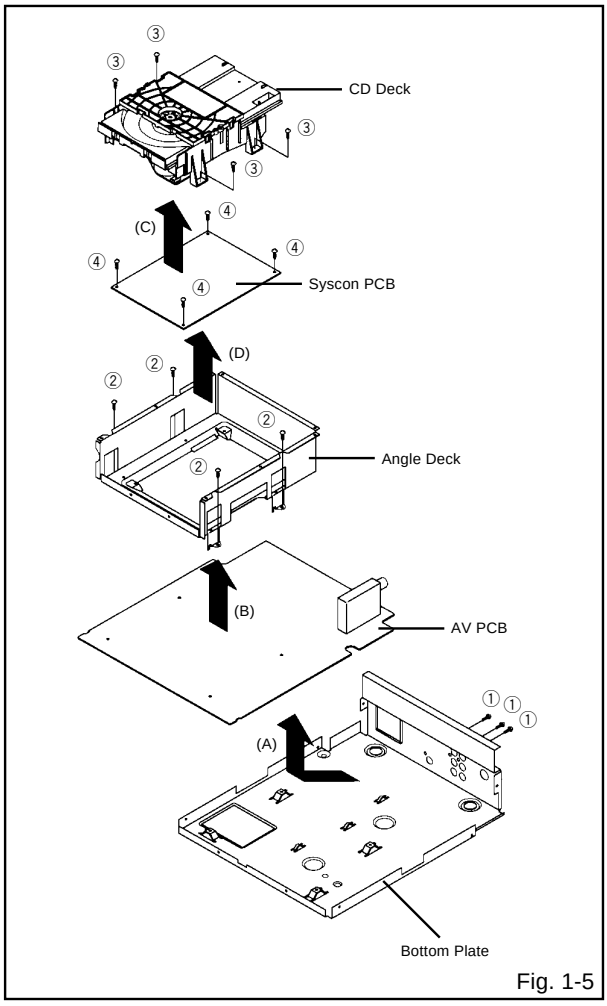


Fig. 1-5

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 2-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground.
   While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
   A cracking noise will be heard as the voltage is discharged.

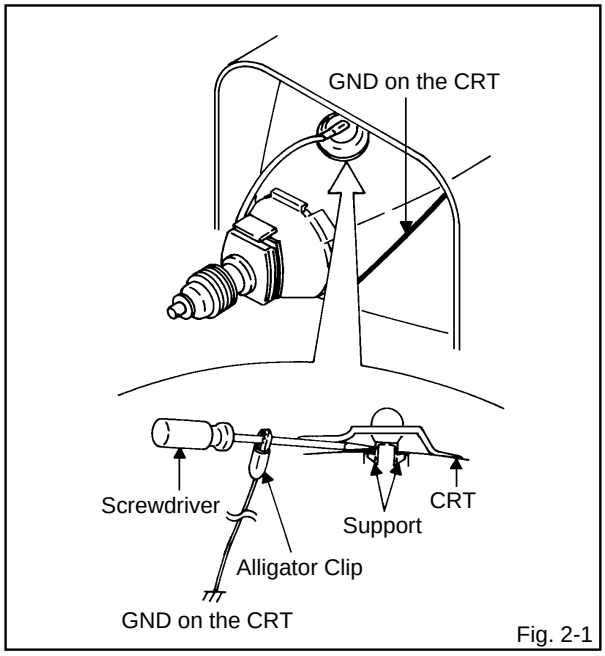


Fig. 2-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 2-2.)**

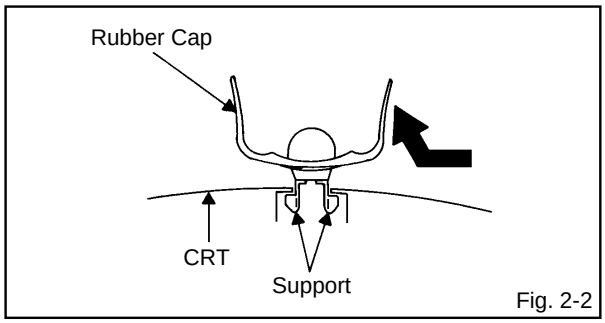


Fig. 2-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 2-3.)**

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

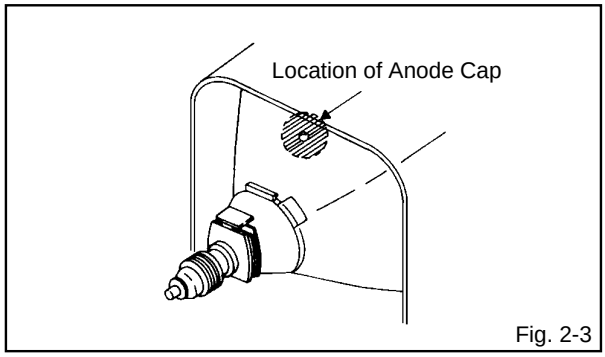


Fig. 2-3

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 2-4.)**

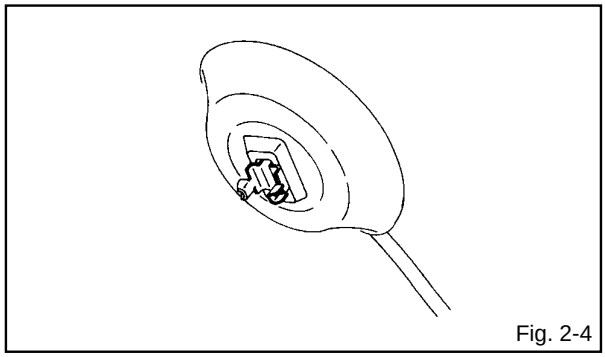


Fig. 2-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 2-5**.

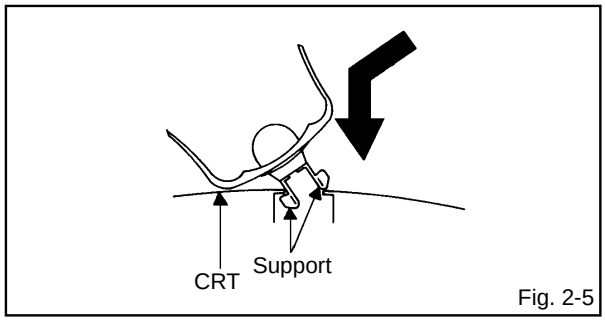


Fig. 2-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter the Service Mode, press both set key and remote control key.
Press both the VOL. key and remocon keys simultaneously for more than 1 second.
Press both the STOP key and remocon keys simultaneously for more than 3 seconds.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of the factory on TV. NOTE: No operation at DVD mode. Do not use this for the normal servicing.
VOL. (-) MIN	3	Initialization of the factory on DVD. NOTE: The operation will work only with STOP mode at DVD mode. Do not use this for the normal servicing.
VOL. (-) MIN	6	POWER ON total hours are displayed on the screen. Refer to the "CONFIRMATION OF USING HOURS". NOTE: No operation at DVD mode. Can be checked of the INITIAL DATA of MEMORY IC on TV. Refer to the "NOTE FOR THE REPLACING OF MEMORY IC". NOTE: No operation at DVD mode.
VOL. (-) MIN	8	Writing of EEPROM initial data on TV. NOTE: No operation at DVD mode. Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).
STOP	7	Releasing of PARENTAL LOCK. NOTE: The operation will work only with STOP mode at DVD mode.
STOP	9	Self-Diagnosis will operate. Refer to the "SELF-DIAGNOSIS"

CONFIRMATION OF USING HOURS

POWER ON total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second.
3. After the confirmation of using hours, turn off the power.

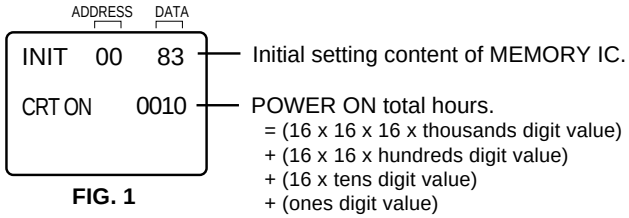

ADDRESS
DATA
INIT 00 83
CRT ON 0010
Initial setting content of MEMORY IC.
POWER ON total hours.
= (16 x 16 x 16 x thousands digit value)
+ (16 x 16 x hundreds digit value)
+ (16 x tens digit value)
+ (ones digit value)

FIG. 1

SELF-DIAGNOSIS

The Self-Diagnosis function will operate when both STOP button on the set and Channel button **(9)** on the remote control are pressed simultaneously (for more than 3 seconds) at DVD LOGO screen with No Disc.

NOTE: No diagnosis of FL CHECK on the TV/DVD Player.

Diagnosis Items	Diagnosis Method/Result	Assumed Defects
1. FL CHECK	"FL" will appear on the TV Monitor. Then all indicators will turn on and go out. All light up (3 seconds) ---> All go out (1 second) ---> All light up all the time Sight check if all the indicators will turn on or go out.	AV PCB Power Block
2. SRAM CHECK	"SRAM" will appear on the TV Monitor. Then non-specific data will be read and written on the non-specific address. If no problem on read and write, "OK" will appear. If any problems, "NG" will appear.	Syscon PCB
3. VIDEO ENCODER CHECK	Color bar and Black/White bar will appear alternately on the TV Monitor. Color bar (1 second) ---> Black/White bar (1 second) ---> Color bar (1 second) Sight check if correct color appears or Color and Black/White bar appears alternately.	Syscon PCB Power Block
4. TRAY CHECK	"TRAY : OPEN" will appear on the TV Monitor. Then the tray will be opened completely and "TRAY : CLOSE" will appear. Then the tray will be closed. Sight check if the tray opens or closes correctly.	Syscon PCB Drive Unit Power Block
5. EEPROM CHECK	"EEPROM" will appear on the TV Monitor. Then non-specific data will be read and written on the non-specific address. If no problem on read and write, "OK" will appear. If any problems, "NG" will appear.	Syscon PCB
6. AUDIO DAC CHECK	"ADAC" will appear on the TV Monitor. Then the pink noise will output from RCA. Lch ---> Rch ---> Lch+Rch Check by ear if audio outputs correctly.	Syscon PCB AV PCB
7. SDRAM	"SDRAM" will appear on the TV Monitor. Then non-specific data will be read and written on the non-specific address. If no problem on read and write, "OK" will appear. If any problems, "NG" will appear.	Syscon PCB

After the diagnosis, the results only for the SRAM, EEPROM and SDRAM will appear on the TV Monitor.
In case of OK, "PASS" will appear for the each diagnosis.

RESULT
PASS : SRAM
PASS : EEPROM
PASS : SDRAM

To finish the Self-Diagnosis, turn off the power on the Main unit.

NOTE FOR THE REPLACING OF MEMORY IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	F9	43	05	01	F1	23	27	F7	81	CD	D9	3F	3F	40	61	63
10	64	26	67	69	2A	6B	6C	6D	6E	6F	70	71	52	72	53	73
20	54	74	55	75	75	56	56	76	76	57	57	77	77	58	58	78
30	78	59	59	79	79	5A	5A	7A	7A	5B	5B	7B	7B	5C	5C	7C
40	7C	5D	5D	7D	7D	5E	5E	7E	7E	5F	5F	5F	7F	7F	BF	B7
50	B9	AC	A1	C5	00	C7	00	00	00	97	AF	7F	A8	B8	B4	7A
60	D9	B0	84	88	9A	9F	2A	5A	00	00	00	10	---	---	---	---

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second. ADDRESS and DATA should appear as FIG 1.

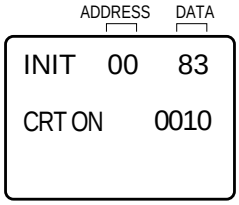


Fig. 1

3. ADDRESS is now selected and should "blink". Using the VOL. UP/DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using VOL. UP/DOWN button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICE ADJUSTMENT

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
  Inferior silicon grease can damage IC's and transistors.
- When replacing IC's and transistors, use only specified silicon grease.
  Remove all old silicon before applying new silicon.

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. AC Voltmeter
4. Pattern Generator

On-Screen Display Adjustment

1. In the condition of NO indication on the screen. Press the VOL. DOWN button on the set and the Channel button **(9)** on the remote control for more than 1 second to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

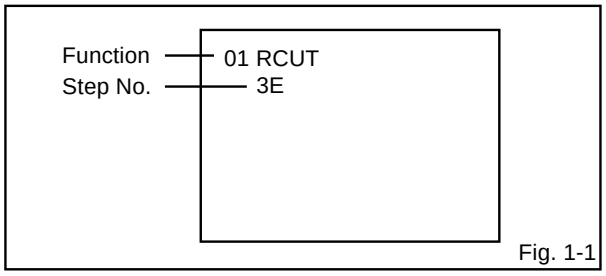


Fig. 1-1

2. Use the Channel UP/DOWN button or Channel button **(1-0)** on the remote control to select the options shown in **Fig. 1-2**.
3. Press the TV MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
01	R CUT OFF	37	BRI. AV(CENT.)
02	G CUT OFF	38	BRI. AV(MAX)
03	B CUT OFF	39	BRI. AV(MIN)
04	G DRIVE	40	COL. AV(CENT.)
05	B DRIVE	41	COL. AV(MAX)
06	BRIGHTNESS(CENT.)	42	COL. AV(MIN)
07	BRIGHTNESS(MAX)	43	TINT AV
08	BRIGHTNESS(MIN)	44	SUB CONTRAST AV
09	COLOR(CENT.)	45	CONT. AV(CENT.)
10	COLOR(MAX)	46	CONT. AV(MAX)
11	COLOR(MIN)	47	CONT. AV(MIN)
12	TINT	48	SHARPNESS AV
13	SUB CONTRAST	49	BRI. DVD(CENT.)
14	CONTRAST(CENT.)	50	BRI. DVD(MAX)
15	CONTRAST(MAX)	51	BRI. DVD(MIN)
16	CONTRAST(MIN)	52	COL. DVD(CENT.)
17	SHARPNESS	53	COL. DVD(MAX)
18	RGB CONTRAST	54	COL. DVD(MIN)
19	H POSITION	55	TINT DVD
20	V POSITION	56	SUB CONTRAST DVD
21	V SIZE	57	CONT. DVD(CENT.)
22	V LINEARITY	58	CONT. DVD(MAX)
23	V S CORRECTION	59	CONT. DVD(MIN)
24	EW PARABOLA CORR.	60	SHARPNESS DVD
25	EW TRAPEZIUM CORR.	61	BRI. GAME(CENT.)
26	H SIZE	62	BRI. GAME(MAX)
27	V EHT	63	BRI. GAME(MIN)
28	H EHT	64	CONT. GAME(CENT.)
29	RF AGC	65	CONT. GAME(MAX)
30	V CENTERING	66	CONT. GAME(MIN)
31	CORNER CORR. TOP	67	TUNING V MUTE
32	CORNER CORR. BTM	68	POWER ON V MUTE
33	OSD H	69	INPUT LEVEL
34	FM LEVEL	70	SEPARATION L
35	TEST PWM	71	SEPARATION H
36	TEST TONE CONTROL	72	CUT OFF

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Set condition is AV MODE without signal.
2. Using the remote control, set the brightness and contrast to normal position.
3. Connect the digital voltmeter to **TP401**.
4. Adjust the **VR502** until the digital voltmeter is 111 ± 0.5V.

2-2: RF AGC

1. Receive the VHF HIGH (63dB).
2. Place the set with Aging Test for more than 15 minutes.
3. Connect the digital voltmeter between the **pin 5 of CP101** and the **pin 1 of CP101**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(29)** on the remote control to select "AGC".
5. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.7 ± 0.05V.

2-3: CUT OFF

1. Adjust the unit to the following settings.
   G DRIVE=3F, B DRIVE=3F, R CUT OFF=7F, G CUT OFF=7F, B CUT OFF=7F
2. Place the set with Aging Test for more than 15 minutes.
3. Set condition is AV MODE without signal.
4. Using the remote control, set the brightness and contrast to normal position.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(72)** on the remote control to select "CUT OFF".
6. Adjust the **Screen Volume** until a dim raster is obtained.

ELECTRICAL ADJUSTMENTS

2-4: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the white 100% signal from the Pattern Generator.
3. Using the adjustment control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(01)** on the remote control to select "RCUT".
5. Using the VOL. UP/DOWN button on the remote control, adjust the RCUT.
6. Press the CH. UP/DOWN button on the remote control to select the "GDRV", "BDRV", "GCUT" or "BCUT".
7. Using the VOL. UP/DOWN button on the remote control, adjust the GDRV, BDRV, GCUT or BCUT.
8. Perform the above adjustments 6 and 7 until the white color is looked like a white.

2-5: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-6: HORIZONTAL POSITION

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(19)** on the remote control to select "HPOSI".
4. Press the VOL. UP/DOWN button on the remote control until the right and left screen size of the vertical line becomes the same.

2-7: HORIZONTAL SIZE

NOTE: Adjust after performing adjustments in section 2-6.

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(26)** on the remote control to select "WIDS".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes 10 ± 2%.

2-8: VERTICAL LINEALITY

NOTE: Adjust after performing adjustments in section 2-7.

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(22)** on the remote control to select "VLIN".
4. Press the VOL. UP/DOWN button on the remote control until the upside and downside screen size of the horizontal line becomes the same.

2-9: VERTICAL SHIFT

NOTE: Adjust after performing adjustments in section 2-8.

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(20)** on the remote control to select "VPOSI".
4. Press the VOL. UP/DOWN button on the remote control until the horizontal line becomes fit to the notch of the shadow mask.

2-10: VERTICAL SIZE

NOTE: Adjust after performing adjustments in section 2-9.

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(21)** on the remote control to select "VSIZE".
4. Press the VOL. UP/DOWN button on the remote control until the rectangle on the center of the screen becomes square.
5. Receive a broadcast and check if the picture is normal.

2-11: PARABOLA CORR

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(24)** on the remote control to select "DPCS".
4. Press the VOL. UP/DOWN button on the remote control until the right and left vertical lines are straight.

2-12: TRAPEZIUM

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(25)** on the remote control to select "KEYS".
4. Press the VOL. UP/DOWN button on the remote control until the both vertical lines of the screen become parallel.

2-13: CORNER CORR TOP

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(31)** on the remote control to select "CNRT".
4. Press the VOL. UP/DOWN button on the remote control until the upper section of the both ends vertical lines are straight.

ELECTRICAL ADJUSTMENTS

2-14: CORNER CORR BOTTOM

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(32)** on the remote control to select "CNRB".
4. Press the VOL. UP/DOWN button on the remote control until the bottom section of the both ends vertical lines are straight.

2-15: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(33)** on the remote control to select "OSD".
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. **(Refer to Fig. 2-1)**

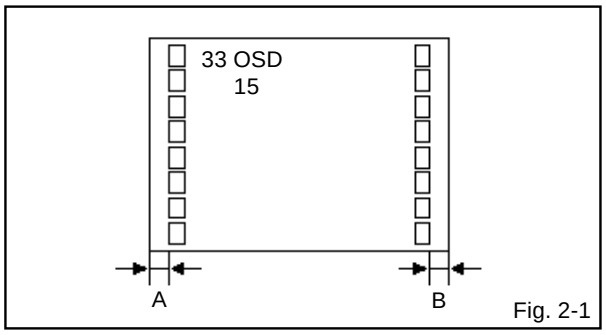


Fig. 2-1

2-16: LEVEL

1. Receive the VHF HIGH (70dB).
2. Connect the AC voltmeter to **TP901**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(69)** on the remote control to select "LVL".
4. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is 75 ± 2mV.

2-17: SEPARATION L/H

1. Receive the stereo signal (L=2KHz, R=400Hz).
2. Connect the AC voltmeter to **AUDIO OUT JACK** though stereo filter (L=400Hz, R=2KHz).
3. Press the AUDIO button on the remote control to set to the STEREO mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(70)** on the remote control to select "SEPAL".
5. Press the VOL. UP/DOWN button on the remote control until the output of L-CH and R-CH become minimum.
6. Press the CH UP button once the set to "SEPAH" mode.
7. Press the VOL. UP/DOWN button on the remote control until the output of L-CH and R-CH become minimum.
8. Press the CH DOWN button once the set to "SEPAL" mode.
9. Repeat step 5 to step 8 several times.
   The output difference of the between with Filter and without Filter should be more than 20dB for both L and R.

2-18: SUB BRIGHT CENTER

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "BRTC".
4. Press the VOL. UP/DOWN button on the remote control until the white 15% is starting to be visible
5. Receive the monoscope pattern. (Audio Video Input)
6. Press the INPUT button on the remote control to set to the AV mode.
7. Using the remote control, set the brightness and contrast to normal position.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(37)** on the remote control to select "BRTCA".
9. Press the VOL. UP/DOWN button on the remote control until the white 15% is starting to be visible
10. Press the TV/DVD button on the remote control to set to the DVD mode.
11. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(49)** on the remote control to select "BRTCD".
12. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV.

2-19: SUB CONTRAST MAX

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(15)** on the remote control to select "CNTX".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "6F"
3. Press the INPUT button on the remote control to set to the AV mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(46)** on the remote control to select "CNTXA".
5. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "71"
6. Press the TV/DVD button on the remote control to set to the DVD mode.
7. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(58)** on the remote control to select "CNTXD".
8. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "71"

ELECTRICAL ADJUSTMENTS

2-20: SUB TINT CENTER

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP803**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(12)** on the remote control to select "TNTC".
5. Press the VOL. UP/DOWN button on the remote control until the waveform becomes as shown in **Fig. 2-2**.
6. Receive the color bar pattern. (Audio Video Input)
7. Press the INPUT button on the remote control to set to the AV mode.
8. Using the remote control, set the brightness, contrast, color and tint to normal position.
9. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(43)** on the remote control to select "TNTCA".
10. Press the VOL. UP/DOWN button on the remote control until the waveform becomes as shown in **Fig. 2-2**.
11. Press the TV/DVD button on the remote control to set to the DVD mode.
12. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(55)** on the remote control to select "TNTCD".
13. Press the VOL. UP/DOWN button on the remote control until the waveform becomes as shown in **Fig. 2-2**.

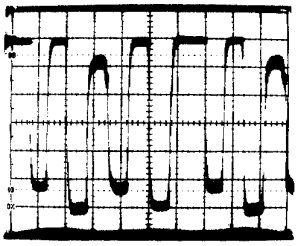


Fig. 2-2

2-21: SUB COLOR CENTER

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscop to **TP801**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(09)** on the remote control to select "COLC".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 120 ± 5% of the white level. **(Refer to Fig. 2-3)**
7. Receive the color bar pattern. (Audio Video Input)
8. Press the INPUT button on the remote control to set to the AV mode.
9. Using the remote control, set the brightness, contrast, color and tint to normal position.
10. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(40)** on the remote control to select "COLCA".
11. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
12. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 120 ± 5% of the white level. **(Refer to Fig. 2-3)**
13. Press the TV/DVD button on the remote control to set to the DVD mode.
14. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(52)** on the remote control to select "COLCD".
15. Press the VOL. UP/DOWN button on the remote control to increase the step numbers by 3 steps to the AV.

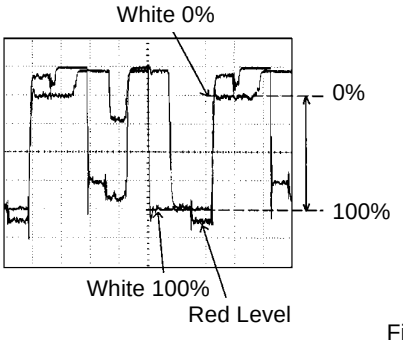


Fig. 2-3

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

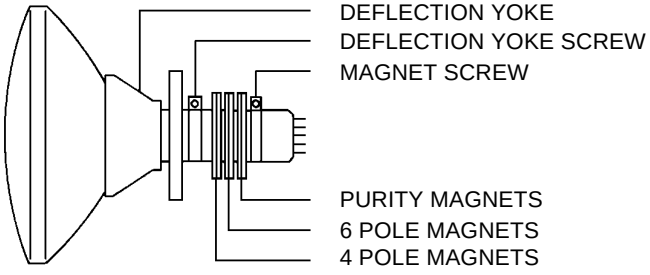


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

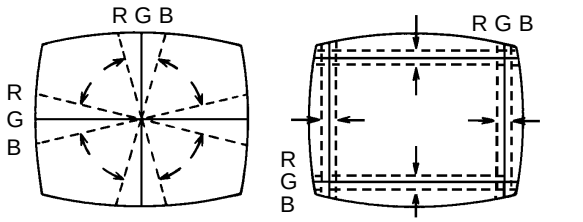
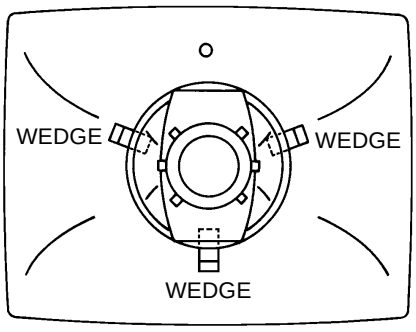


Fig. 3-2-a

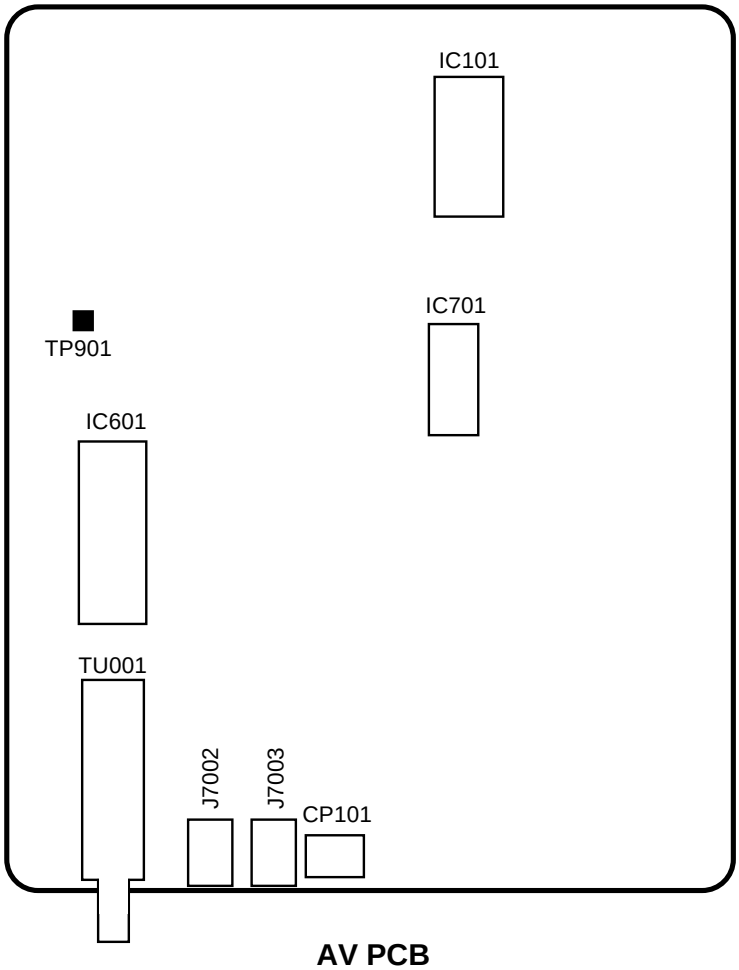


WEDGE POSITION

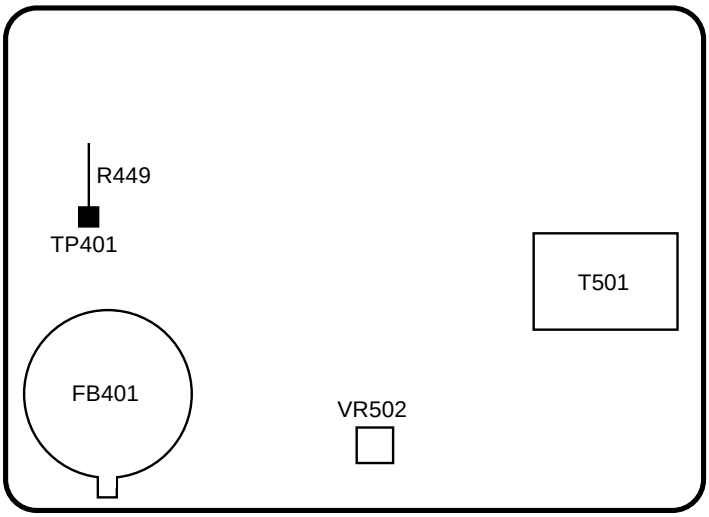
Fig. 3-2-b

UIDE FOR REPAIRIN

MAJOR COMPONENTS LOCATION GUIDE

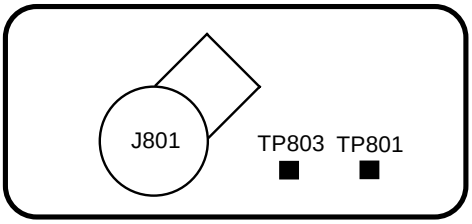


AV PCB



FOCUS VOLUME
SCREEN VOLUME

MAIN PCB



CRT PCB

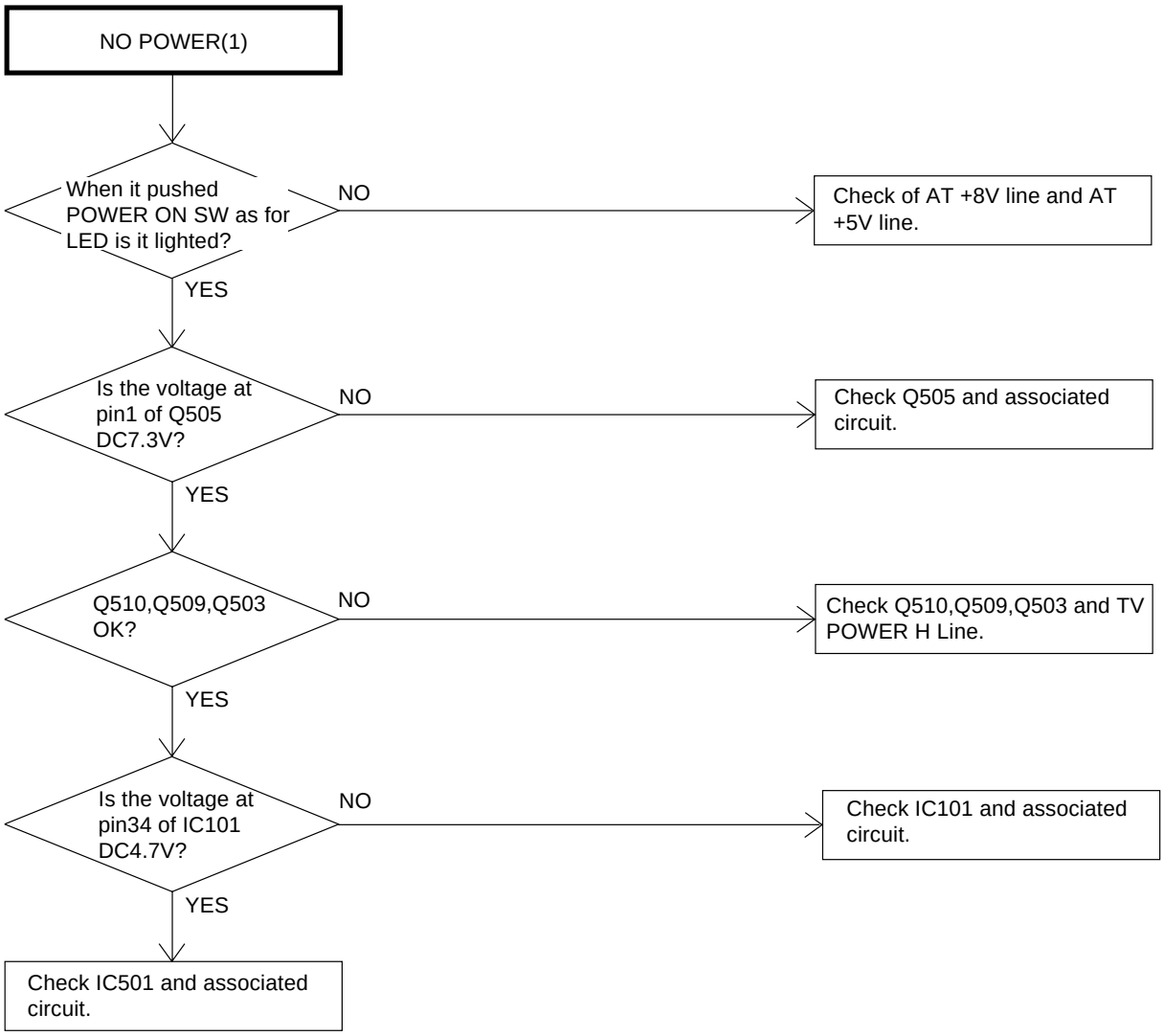
IC DESCRIPTION

OEC6063A

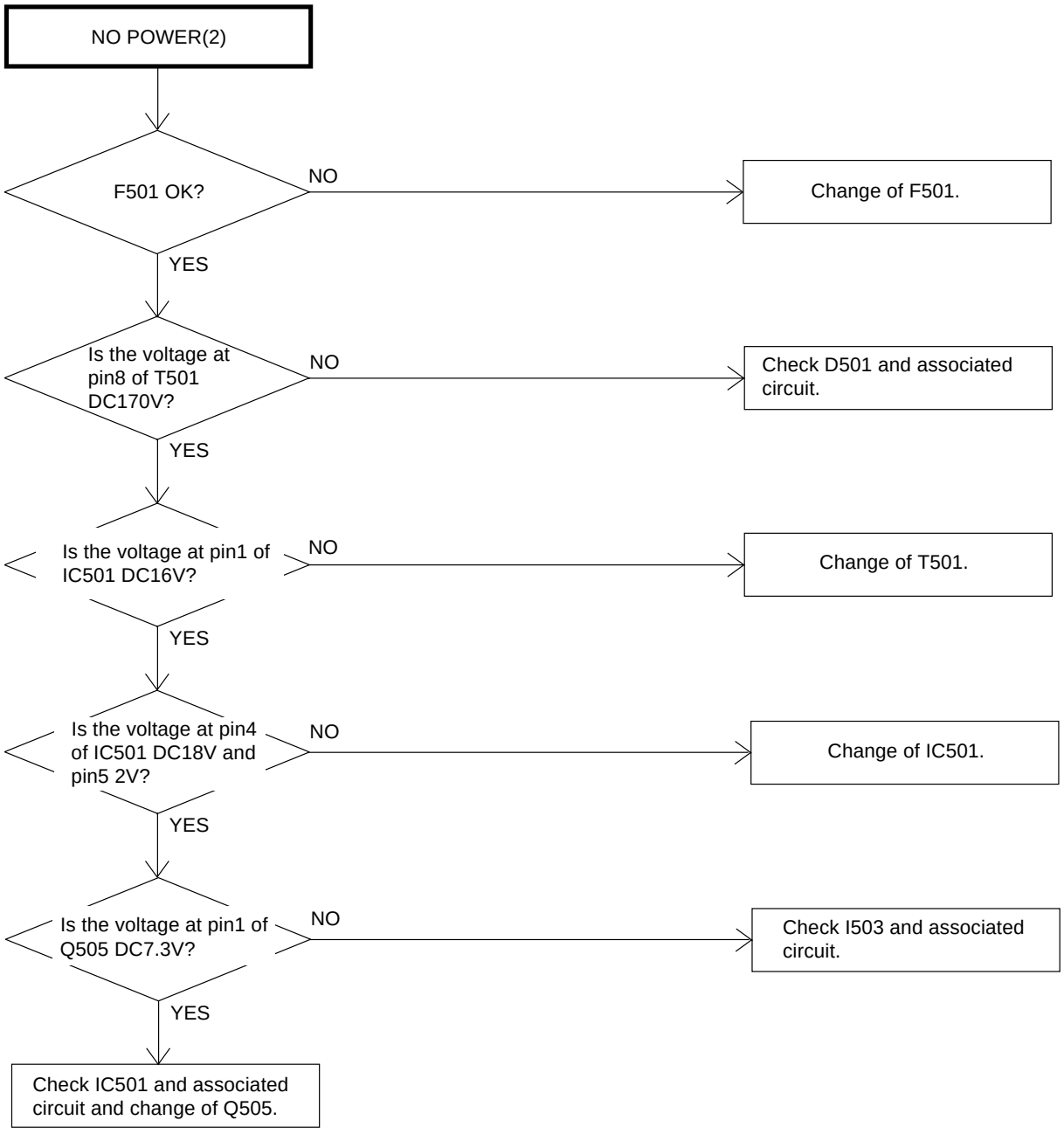
No.	Symbol	I/O	Logic	Function	Function
1	VSS	-	-	Negative power supply (Ground)	
2	X-RAY TEST	Output	1	X-RAY test output	C-MOS
3	RGB/COMP	Output	-	It changes "Rgb/Composite" picture signal for "DVD".	C-MOS
4	TV MUTE	Output	1	Volume muting output	C-MOS
5	EXT MUTE	Output	1	External picture/volume muting output	C-MOS
6	DVD RESET	Output	0	Enforced reset output for DVD	C-MOS
7	TV POWER	Output	1	Power control output	C-MOS
8	VOLUME PWM	Output	-	Puls width modulation output for the volume control	C-MOS
9	UART CLOCK	Output	-	The asynchronous clock output	C-MOS
10	UART START BIT	Input	-	The entry for the asynchronous Start bit detection	C-MOS
11	RX	Input	-	The communication DATA entry from the side of DVD	C-MOS
12	TX	Output	-	The communication DATA output to the side of DVD	Nch-OD
13	UART CLOCK IN	Input	-	The asynchronous clock Input	C-MOS
14	BBE H	Output	1	BBE output	C-MOS
15	X-RAY IN	Input	-	X-RAY detection input (nom. 0V)	C-MOS
16	AFT	Input	-	Voltage of tuning input	C-MOS
17	KEY1	Input	-	Voltage of the TV button input	C-MOS
18	KEY2	Input	-	Voltage of the TV button input	C-MOS
19	TV/DVD	Output	1	TV/DVD picture signal changing output	C-MOS
20	DEGAUSS	Output	1	Degauss output	Nch-OD
21	IIC BUS OFF	Output	0	Serial clock/data stop input	C-MOS
22	OSD R	Output	1	Red output of RGB image output	C-MOS
23	OSD G	Output	1	Green output of RGB image output	C-MOS
24	OSD B	Output	1	Blue output of RGB image output	C-MOS
25	OSD Y/BLK	Output	1	Fast blanking control signal	C-MOS
26	Hsync	Input	0	Horizontal synchronization input	C-MOS
27	Vsync	Input	0	Vertical synchronization input	C-MOS
28	OVDD	-	-	Positive power supply (+5V nom.)	
29	OVCC	-	-	Negative power supply (Ground)	
30	TEST	Input	-	Test input (connects with Ground)	
31	XIN	Input	-	Connect the main crystal.	
32	XOUT	Output	-	Connect the main crystal.	
33	RESET	Input	0	System reset voltage input	
34	POWER FAIL	Input	0	Power failure detection input	C-MOS
35	REMOCON	Input	0	Remote control input	C-MOS
36	SD	Input	1	Synchronization detector input	C-MOS
37	SCL	Output	1	Serial clock output	Nch-OD
38	SDA	In/Output	1	Serial data Input/output	Nch-OD
39	VSS	-	-	Negative power supply (Ground)	
40	VIDEO IN 1	Input	-	Picture signal input for the Closed Caption (2Vp-p)	
41	VIDEO IN 2	Input	-	Picture signal input for the Closed Caption (2Vp-p)	
42	VDD	-	-	Positive power supply (+5V nom.)	

TROUBLESHOOTING GUIDE

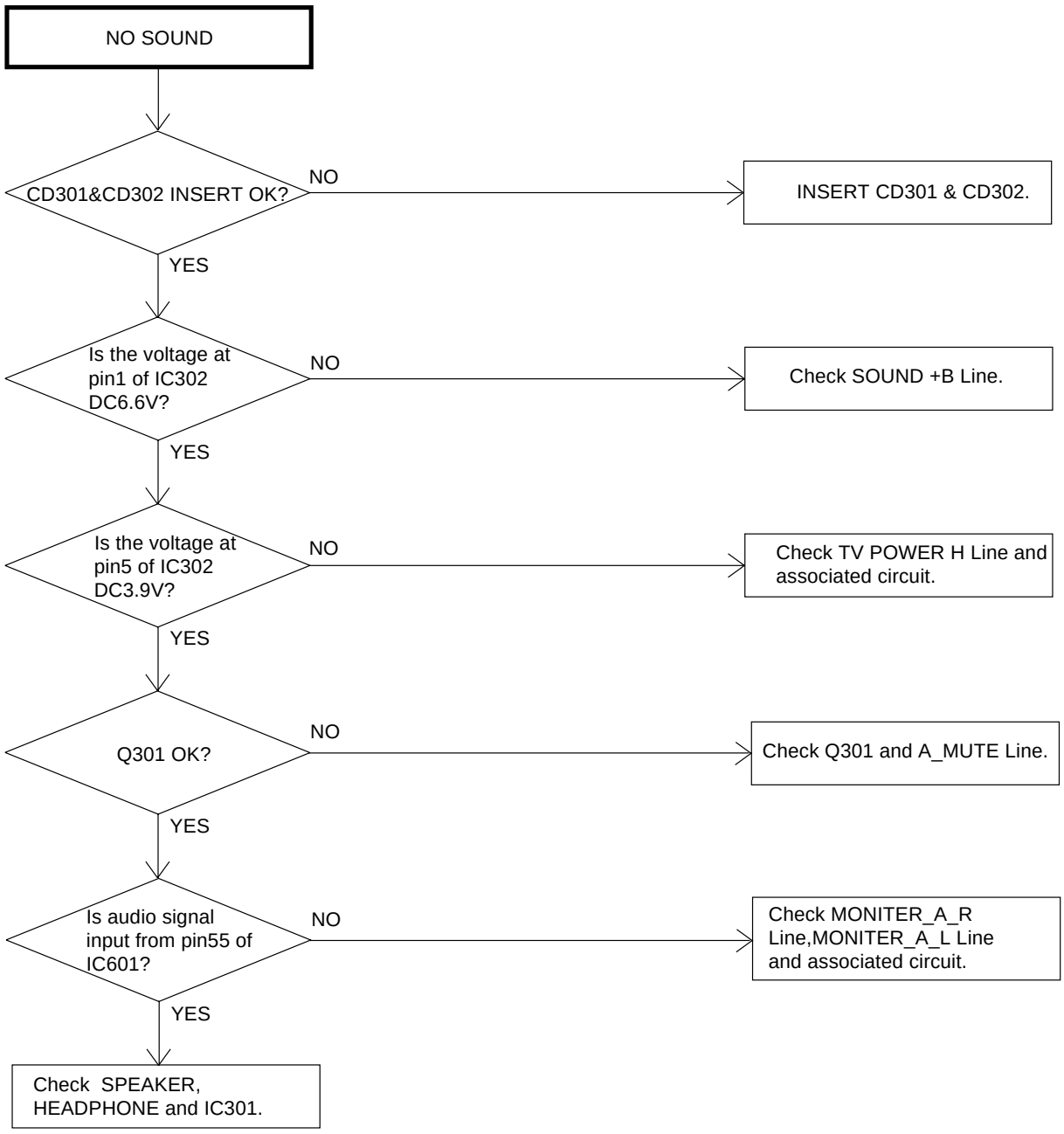
(TV SECTION)



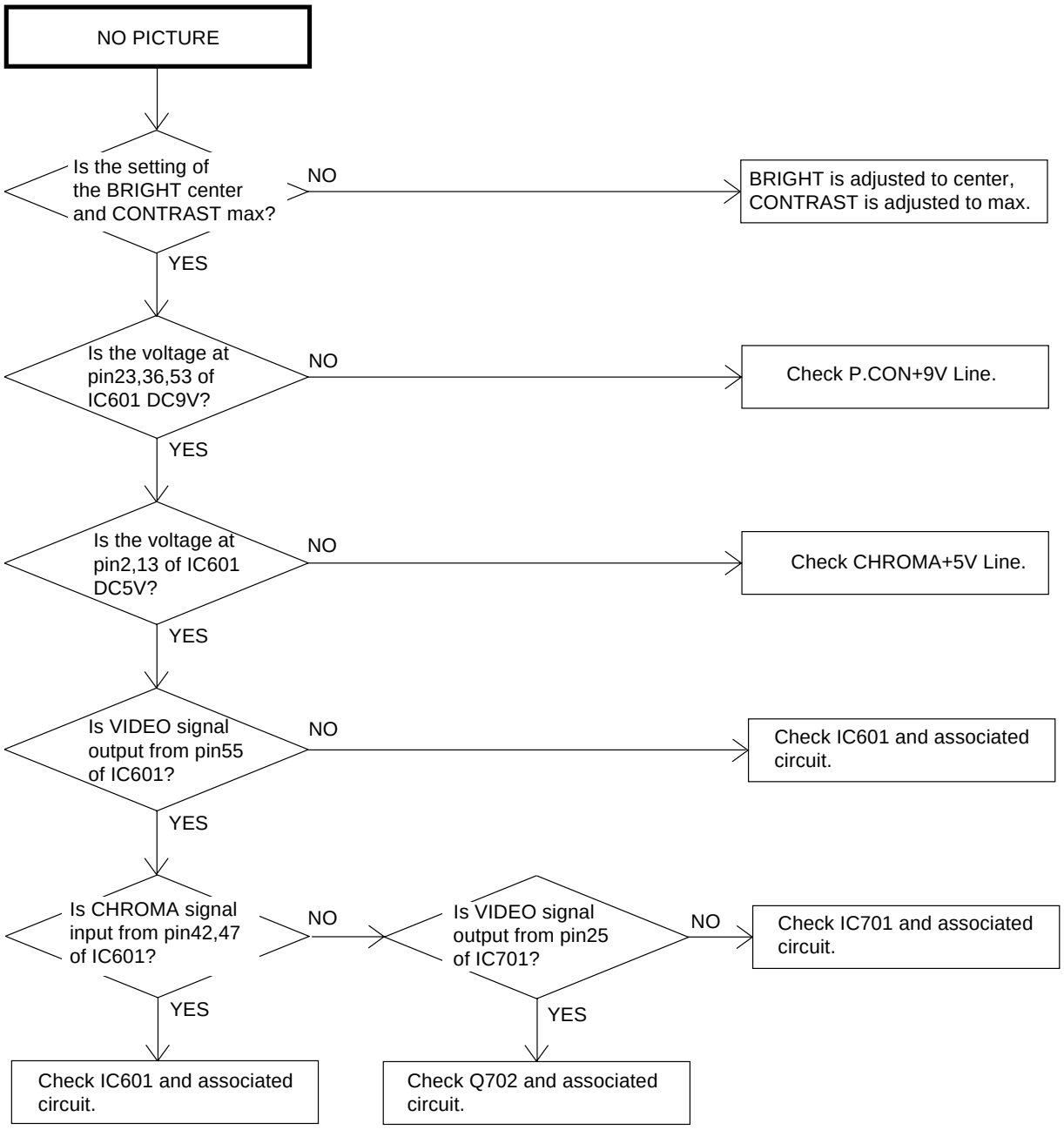
TROUBLESHOOTING GUIDE



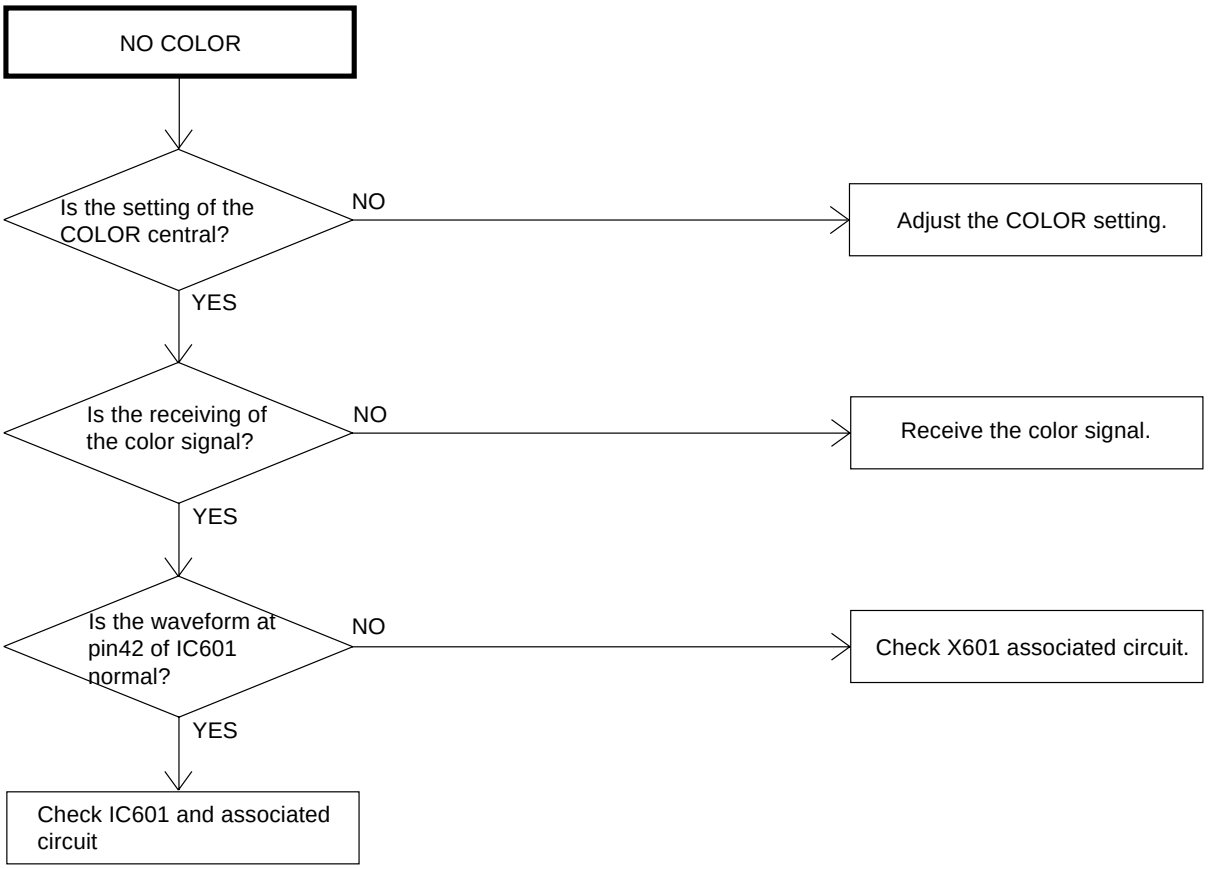
TROUBLESHOOTING GUIDE



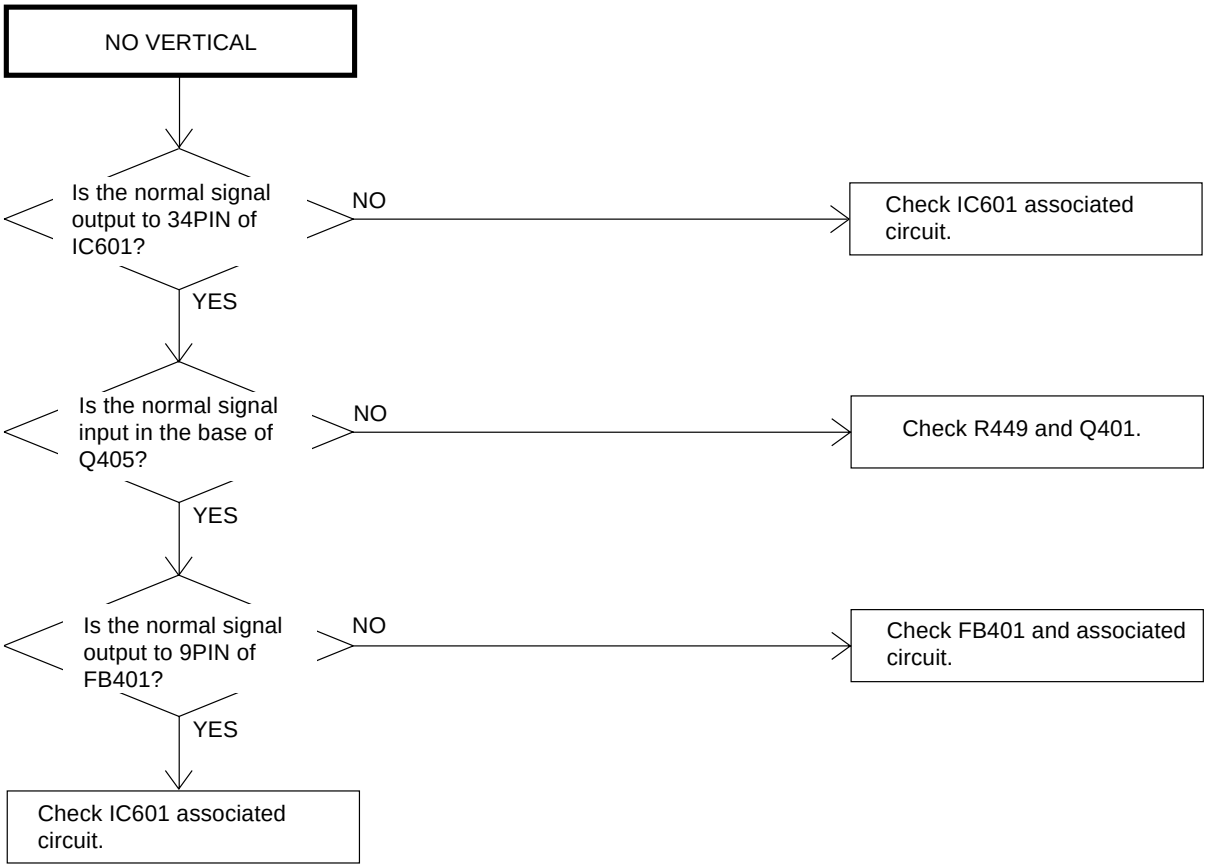
TROUBLESHOOTING GUIDE



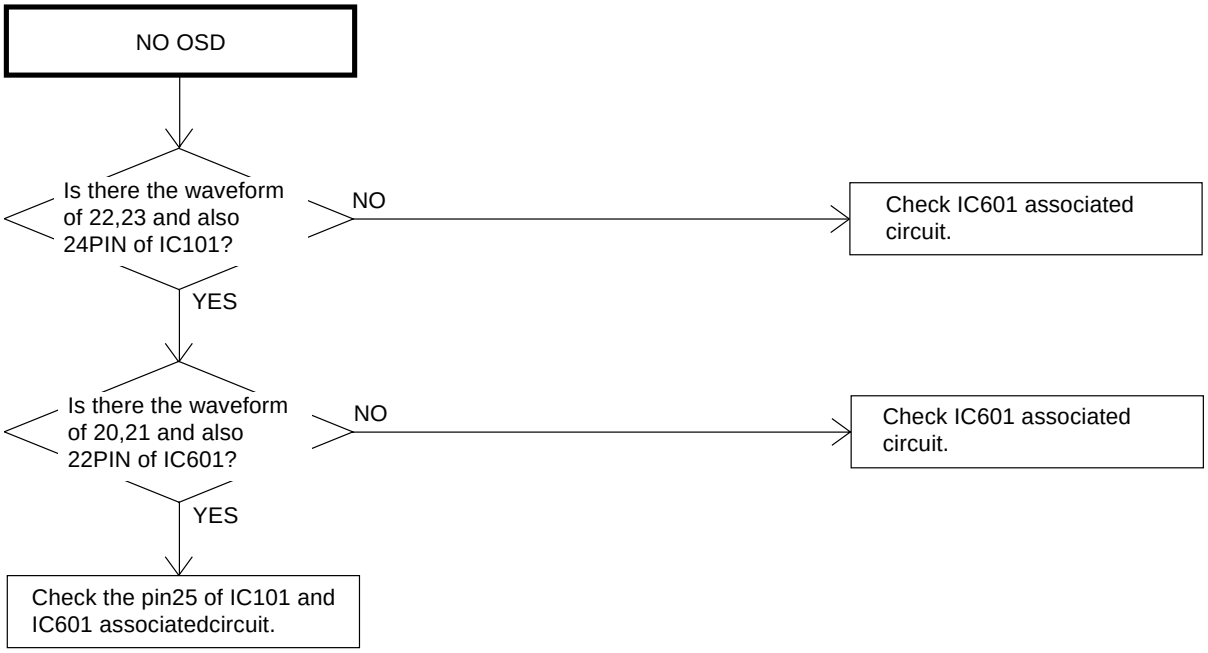
TROUBLESHOOTING GUIDE



TROUBLESHOOTING GUIDE

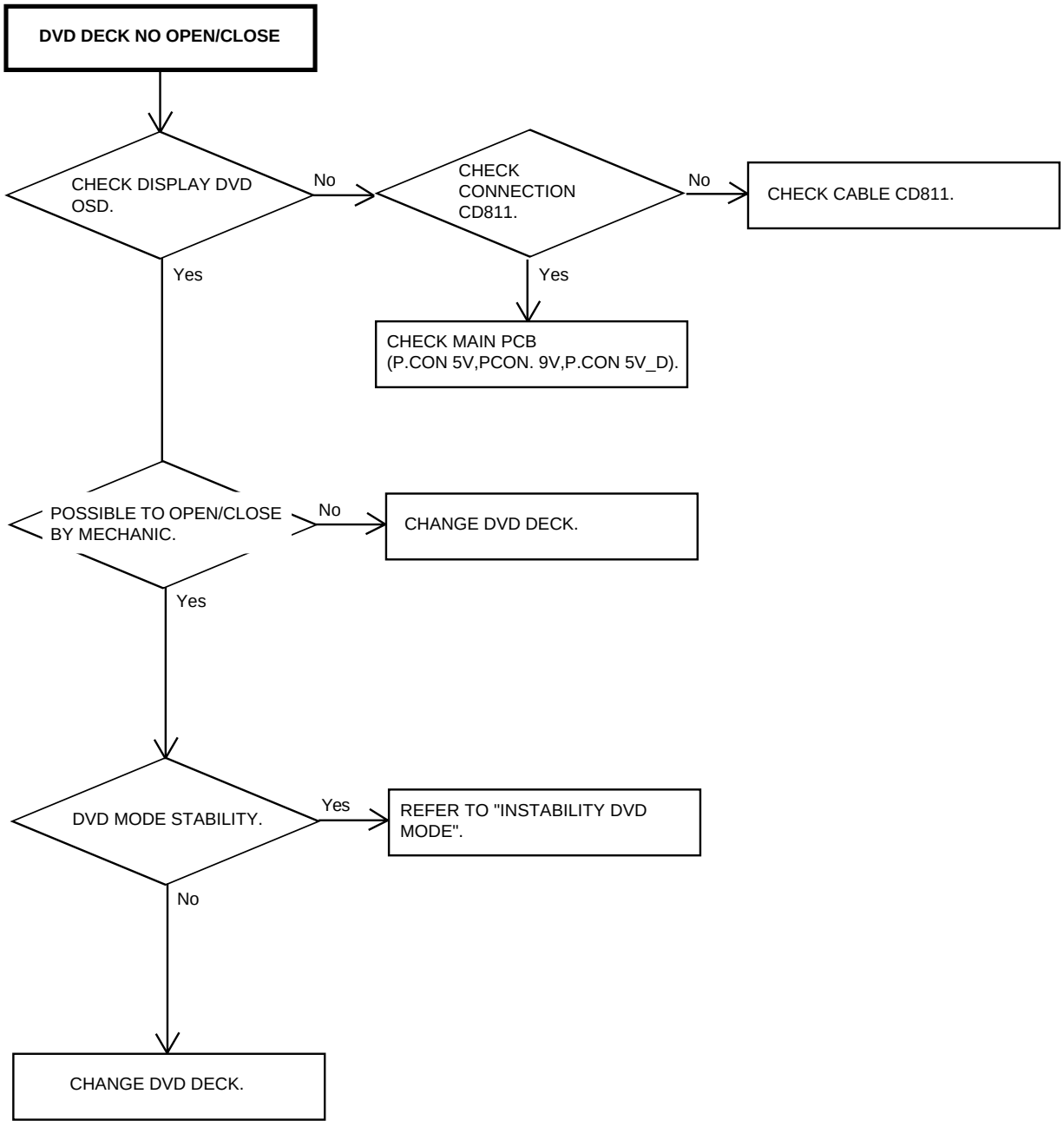


TROUBLESHOOTING GUIDE

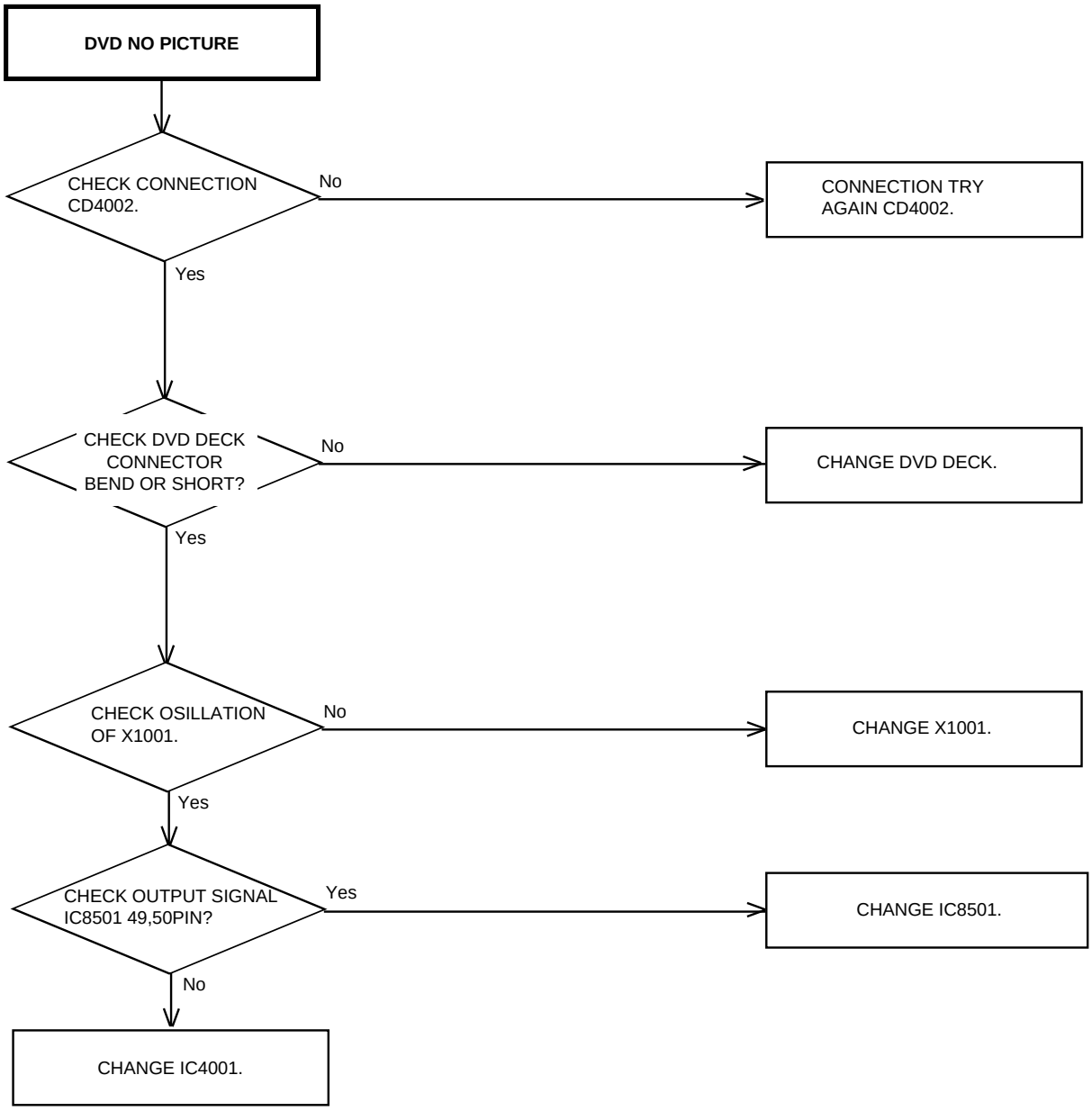

NO OSD
Is there the waveform of 22,23 and also 24PIN of IC101?
NO
Check IC601 associated circuit.
YES
Is there the waveform of 20,21 and also 22PIN of IC601?
NO
Check IC601 associated circuit.
YES
Check the pin25 of IC101 and IC601 associatedcircuit.

TROUBLESHOOTING GUIDE

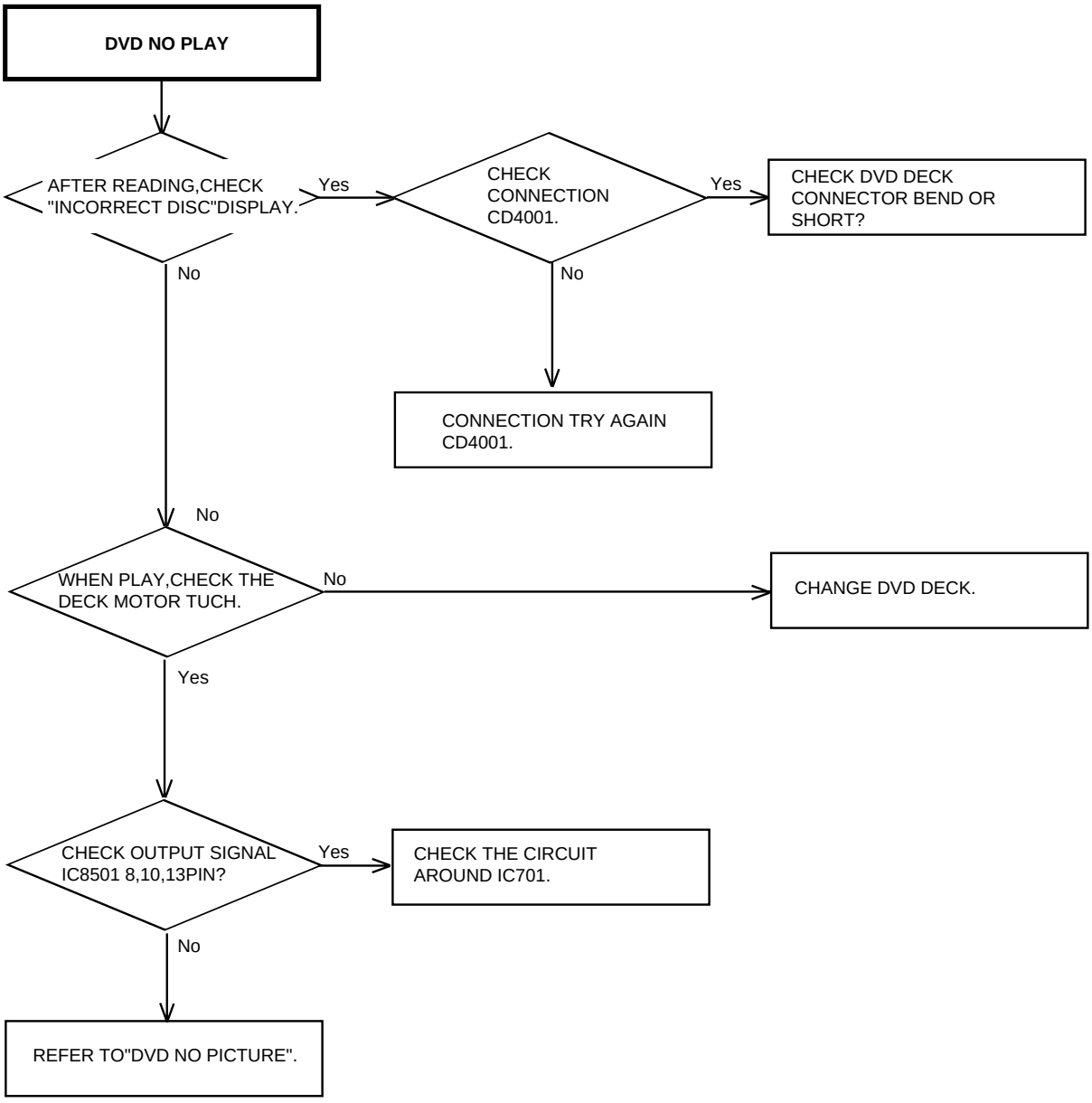
(DVD SECTION)



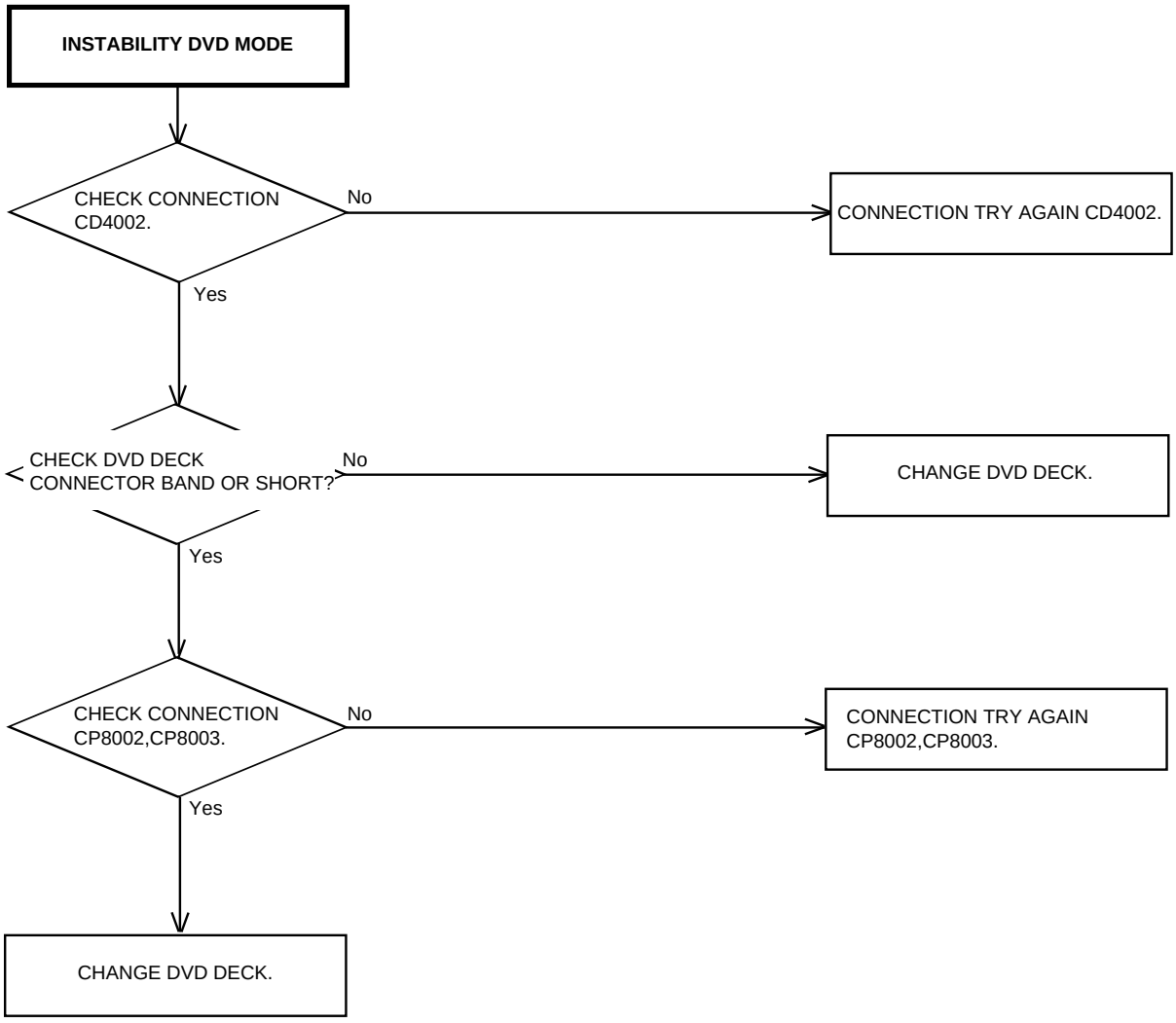
TROUBLESHOOTING GUIDE



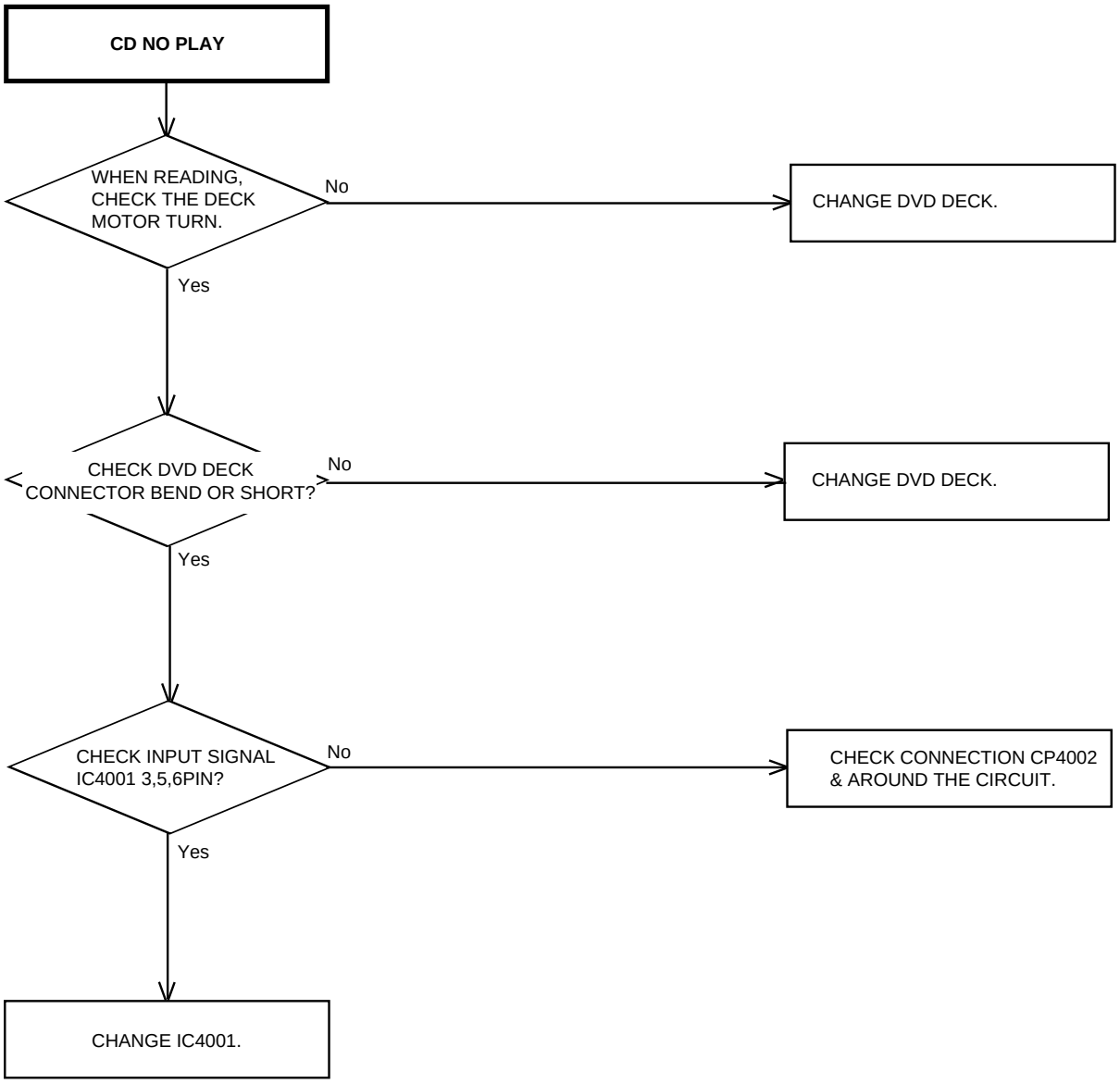
TROUBLESHOOTING GUIDE

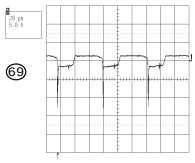


TROUBLESHOOTING GUIDE



TROUBLESHOOTING GUIDE





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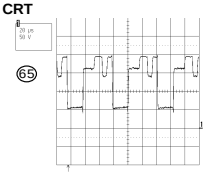
CRT



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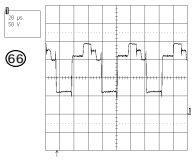

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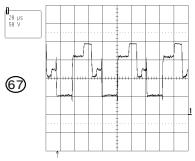

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NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

AV-20FD22 STANDARD CIRCUIT DIAGRAM

■ NOTE ON USING CIRCUIT DIAGRAMS

1.SAFETY

The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

2.INDICATION OF PARTS SYMBOL [EXAMPLE]

●In the PC board :R1209→R209

3.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND.
Please, care must be taken for the following points.
(1)Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, fo example, the chassis is pulled out.
(2)Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected , a fuse or any parts will be broken.
◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

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SYSCON PCB SDRAM SCHEMATIC DIAGRAM
SYSCON PCB SYSCON SCHEMATIC DIAGRAM
SYSCON PCB VIDEO ENCODER SCHEMATIC DIAGRAM
AV PCB POWER SCHEMATIC DIAGRAM
AV PCB MICON/TUNER SCHEMATIC DIAGRAM
AV PCB VIF/SIF/CHROMA SCHEMATIC DIAGRAM
AV PCB SOUND AMP SCHEMATIC DIAGRAM
AV PCB I/O SCHEMATIC DIAGRAM
AV PCB AV SW SCHEMATIC DIAGRAM
AV PCB COMB FILTER SCHEMATIC DIAGRAM
AV PCB STEREO SCHEMATIC DIAGRAM
OPERATION PCB SCHEMATIC DIAGRAM
MAIN PCB TV POWER SCHEMATIC DIAGRAM
MAIN PCB DEFLECTION SCHEMATIC DIAGRAM
CRT PCB SCHEMATIC DIAGRAM

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SYSCON PCB PATTERN
AV PCB PATTERN
OPERATION PCB PATTERN
MAIN/CRT PCB PATTERN

WAVEFORMS ····· 53

AV-20FD22

SEMICONDUCTOR BASE CONNECTIONS

DIODE

1SS133T-77
AU02A-EIC
MTZJ10B T-77
MTZJ11B T-77
MTZJ27B T-77
MTZJ30B T-77
MTZJ5.1B T-77
MTZJ5.6B T-77
MTZJ6.8B T-77

11E1N-TA1B2
11ES1-EIC
SB040-G3

10ELS2N-TA1B2
10ELS6-TA2B5
1N4005-EIC
21DQ09N-TA2B1
RMPG06J-G3
RU2AM-EIC
SB140-EIC

1SS355 TE-17

SLR-342VCT32

FMV-3FULF027-102

GBL06L-6177

IC

OEC6063A
TB1253N
TC90A45P

MM1311AD

BT865AKRF
MD36710X
ZR36703

AN5829S
CD4053BNSR
HY57V161610DTC-8
LA7151M-TP-T1
M62420FP
PCM1716E
SN74LV4052APW

BR24C01AF-WE2

S-24C08ADPA-01

NJM4580M

PST600C

KIA7805API
KIA7809API

STR-G6624

AN7522

AN5522

TRANSISTOR

2SA1013 (TPE6)
2SA1624-AA
2SB1131(S,T)-AE
2SC2909(S,T)-AA
2SD1246(S,T)-AA
KTA1266-AT(Y,GR)
KTA1271_Y-AT

2SC1740SP TP
KRC111MAT
KRC114MAT
KTC3198-AT(Y,GR)

2SC4160-OEC-YAC1
2SD1667(R,S)

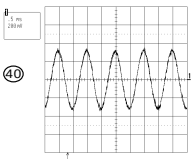
2SC2621(D,E)-RAC

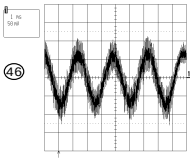
2SB1143(S,T,U)

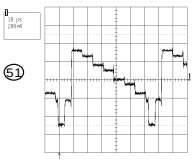
2SA1037AKT146R,S
2SC2412KT146 R,S
2SC2412KT147(R,S)
2SC2814(F3,F4)-T
DTA114EKAT146
DTA143EKAT146
DTC144EKAT146
KRC103RTK
KRC111RTK

2SD2499(LBOEC1)

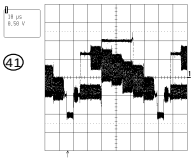
STEREO

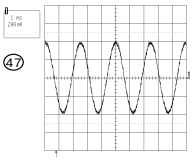


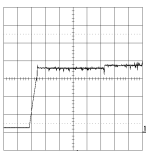




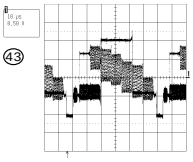
TV POWER

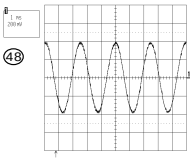


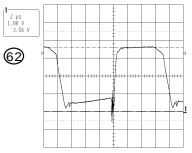




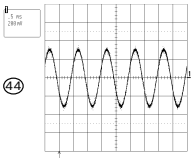
AV SW

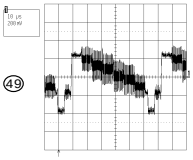


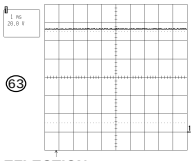




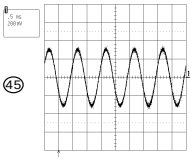
COMB FILTER

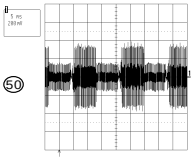


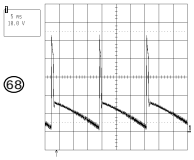




DEFLECTION



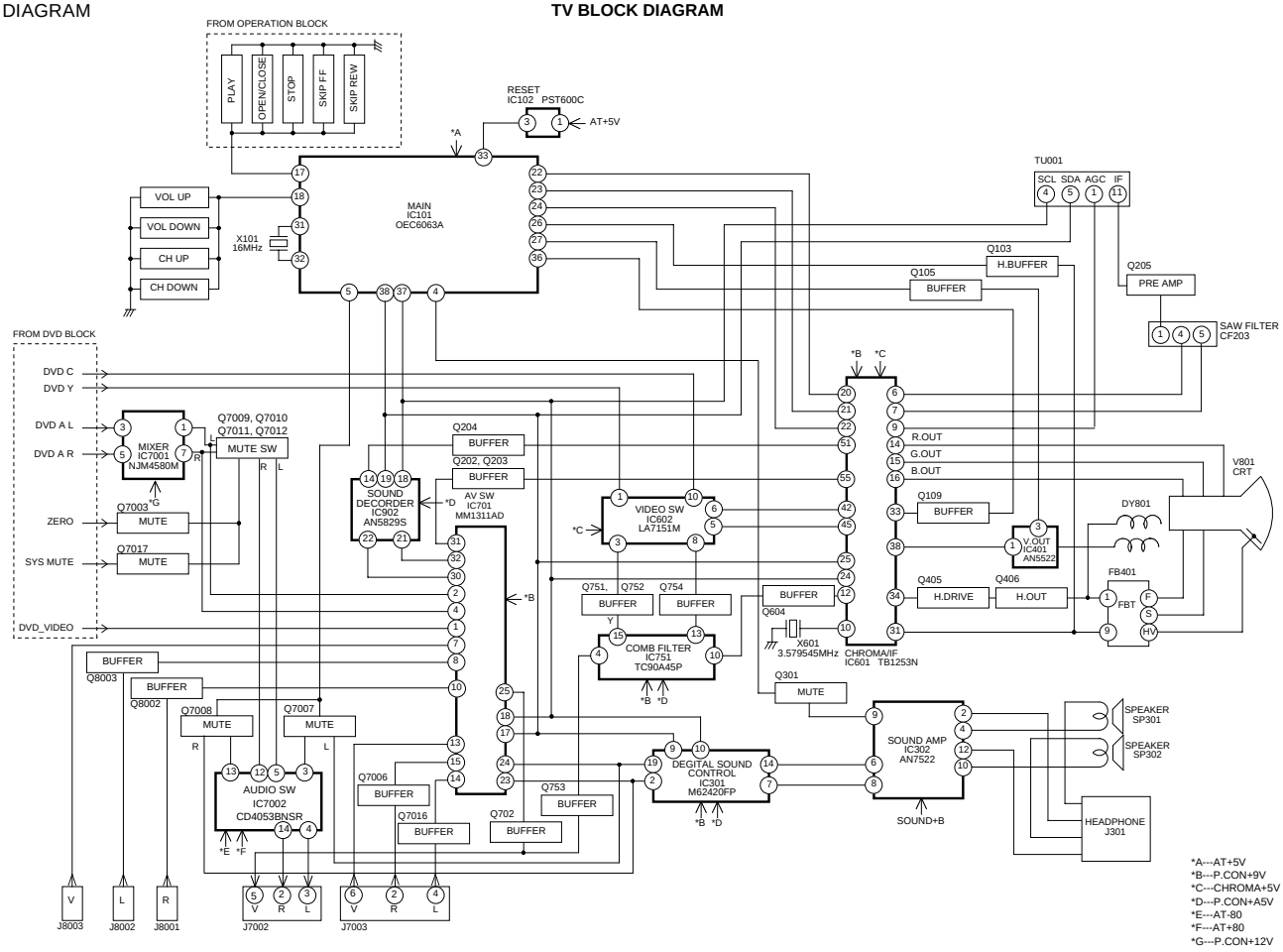




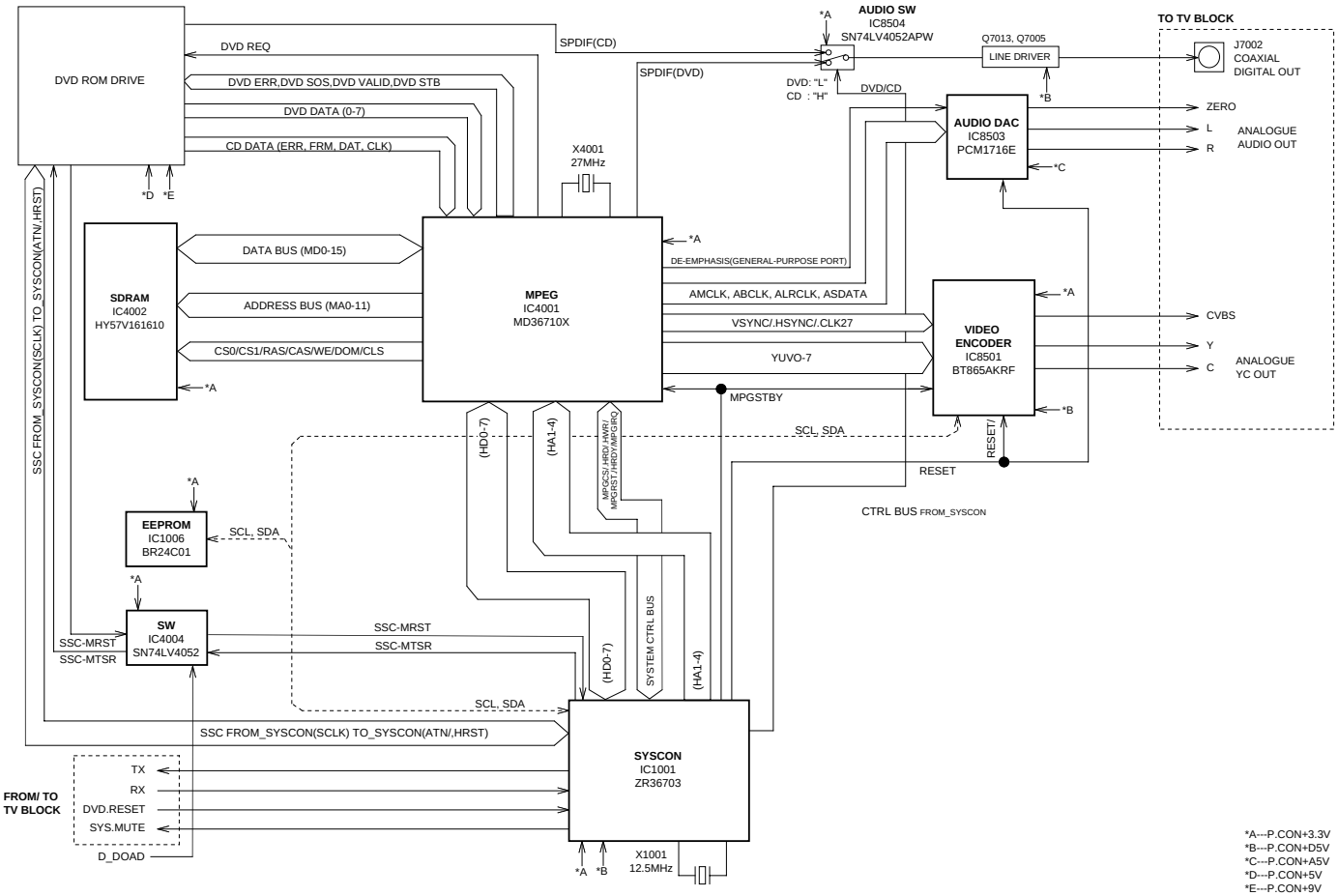
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

BLOCK DIAGRAM

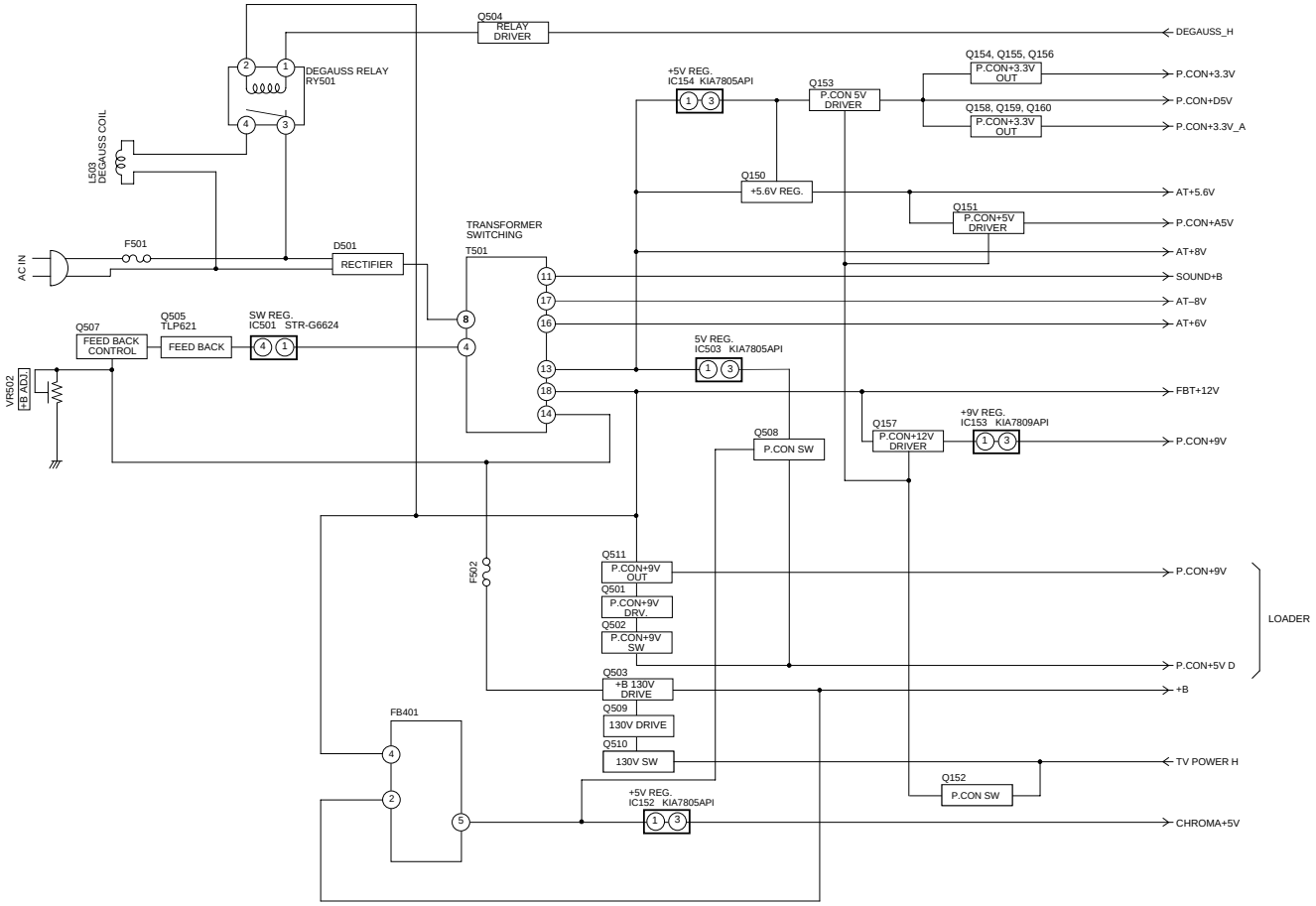
TV BLOCK DIAGRAM



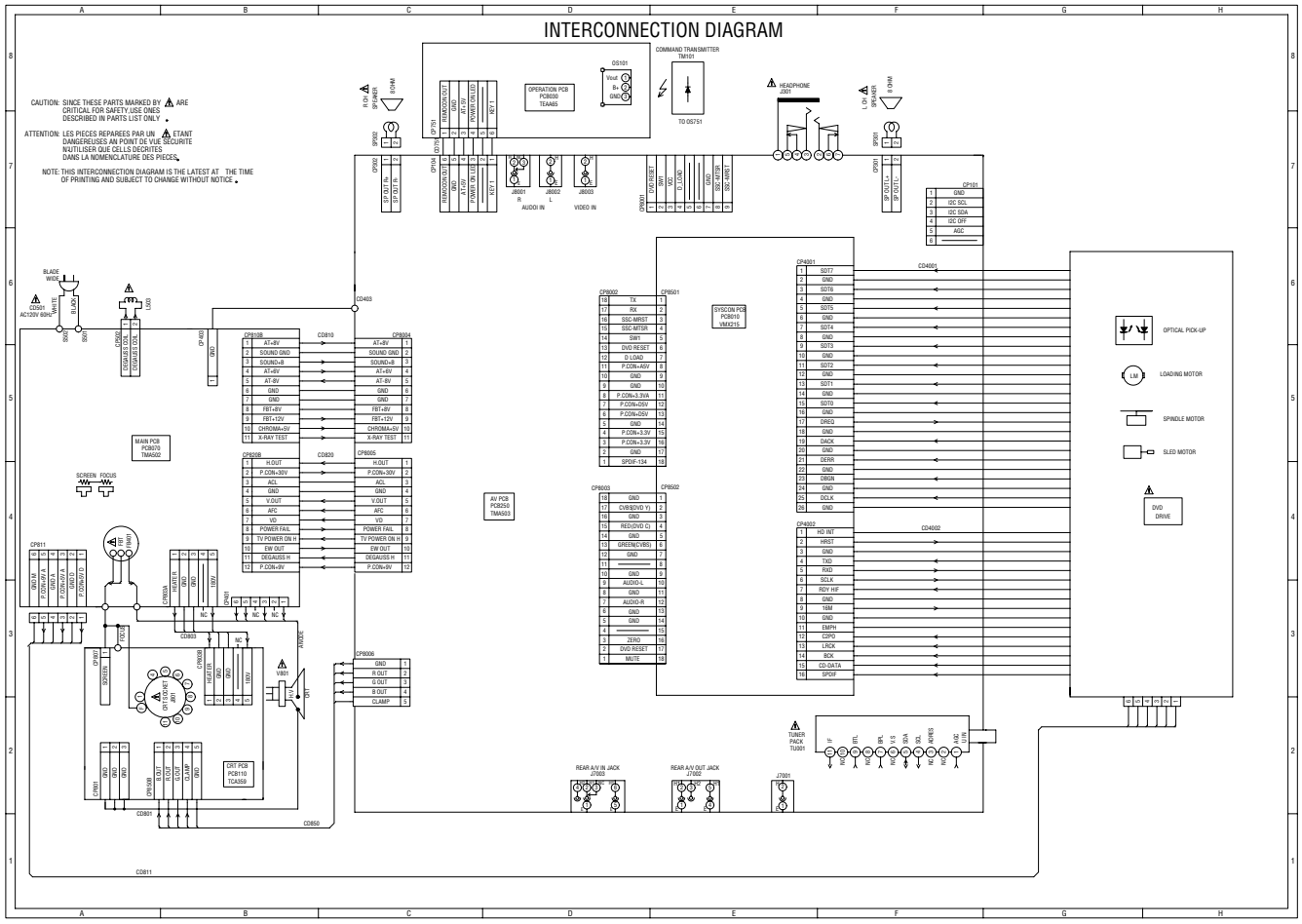
DVD BLOCK DIAGRAM



POWER BLOCK DIAGRAM

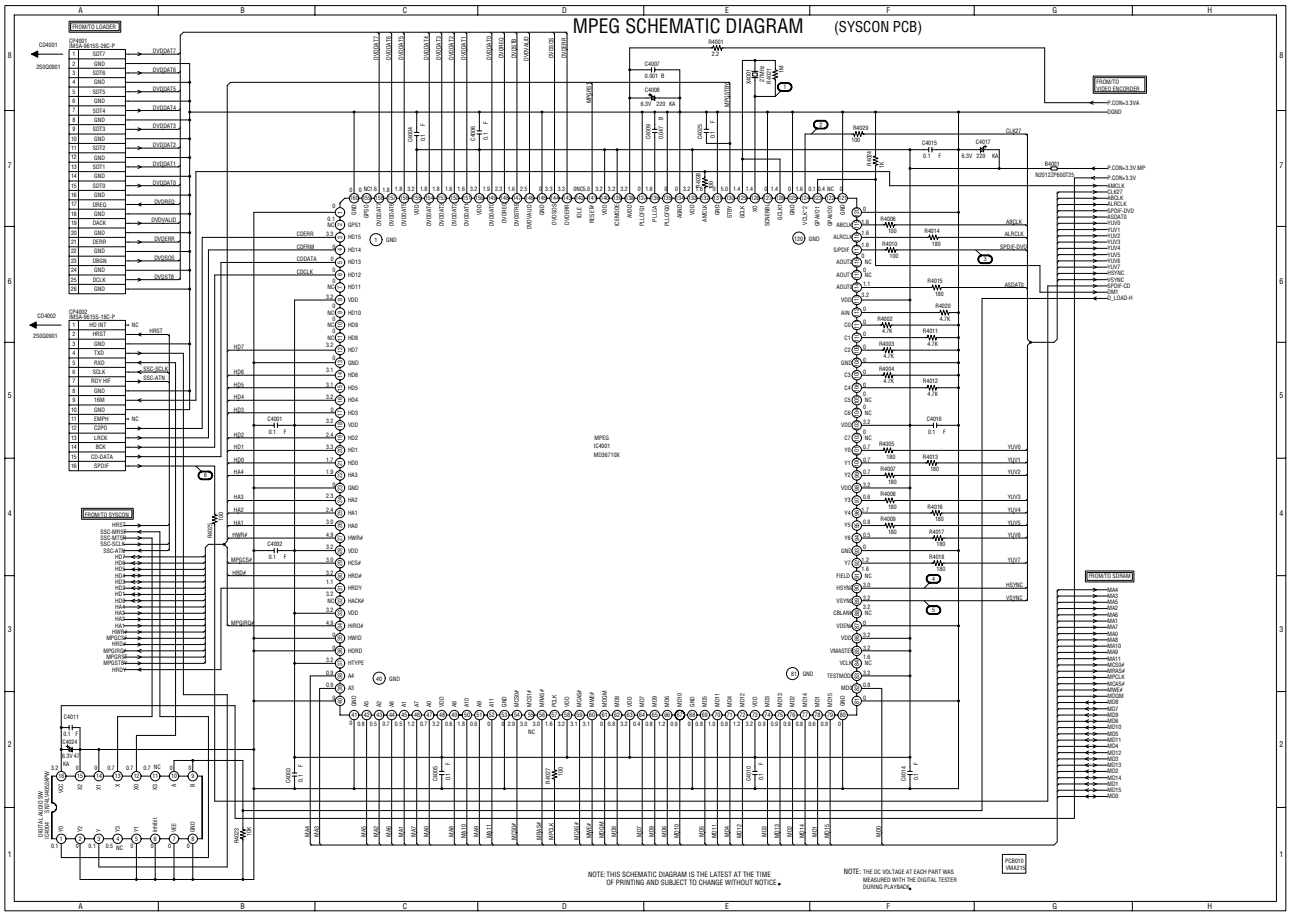


WIRING CONNECTION DIAGRAM

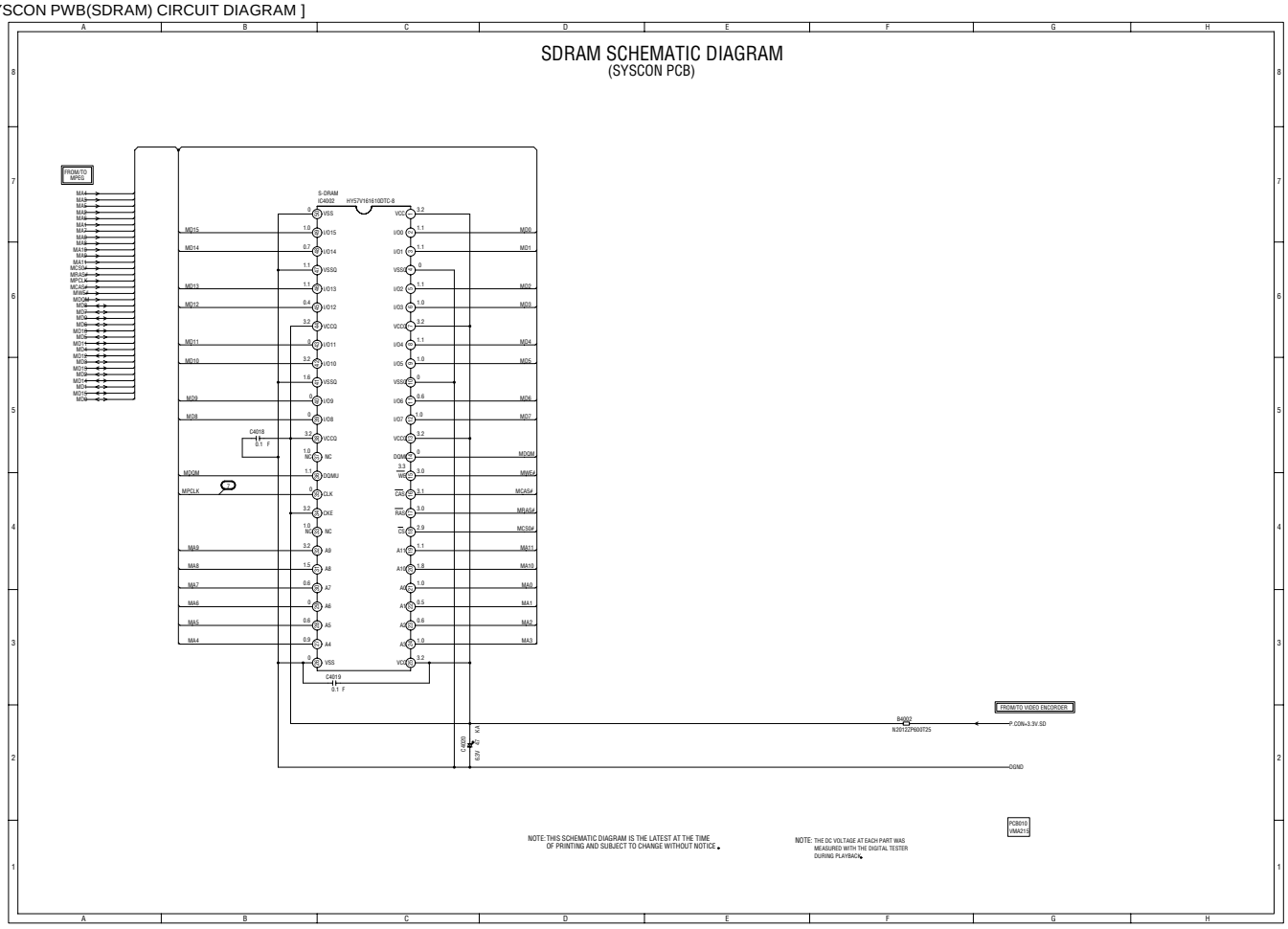

INTERCONNECTION DIAGRAM
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY .
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE NUITILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .
OPERATION PCB PCB030 TEA465
COMMAND TRANSMITTER TM101
TO DS751
HEADPHONE J301
OPTICAL PICK-UP
LOADING MOTOR
SPINDLE MOTOR
SLED MOTOR
DVD DRIVE
MAIN PCB PCB070 TMA502
AV PCB PCB053 TMA503
SYSCON PCB PCB019 VMA215
CRT PCB PCB110 TCA359
TUNER PACK TU001
REAR A/V IN JACK J7003
REAR A/V OUT JACK J7002
J7001
No.51821 2-9 2-10 No.51821

Circuit Diagram

[SYSCON PWB(MPEG) CIRCUIT DIAGRAM]


MPEG SCHEMATIC DIAGRAM (SYSCON PCB)
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

[SYSCON PWB(SDRAM) CIRCUIT DIAGRAM]



[SYSCON PWB(SYSCON) CIRCUIT DIAGRAM]

SYSCON SCHEMATIC DIAGRAM

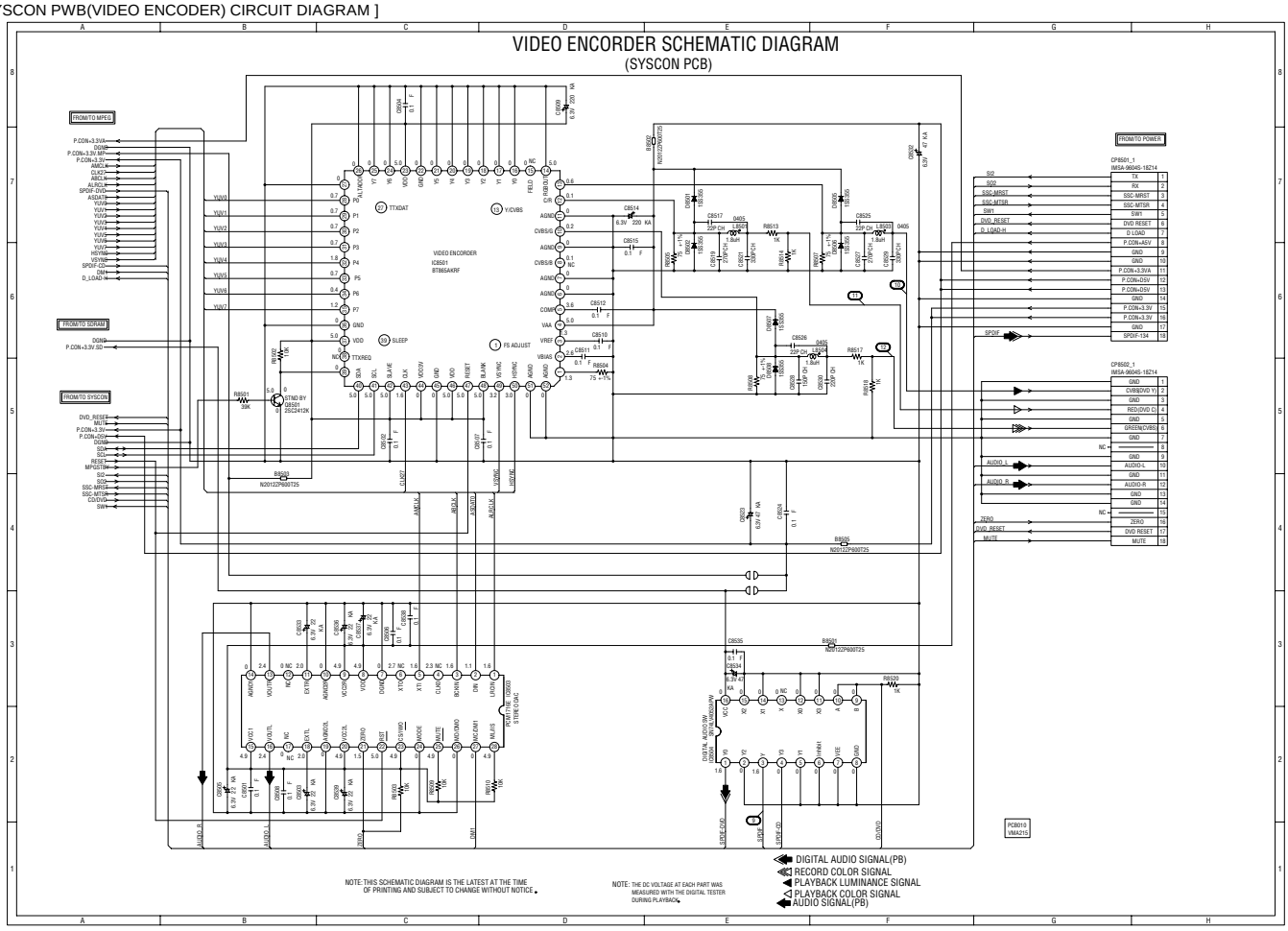
(SYSCON PCB)

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

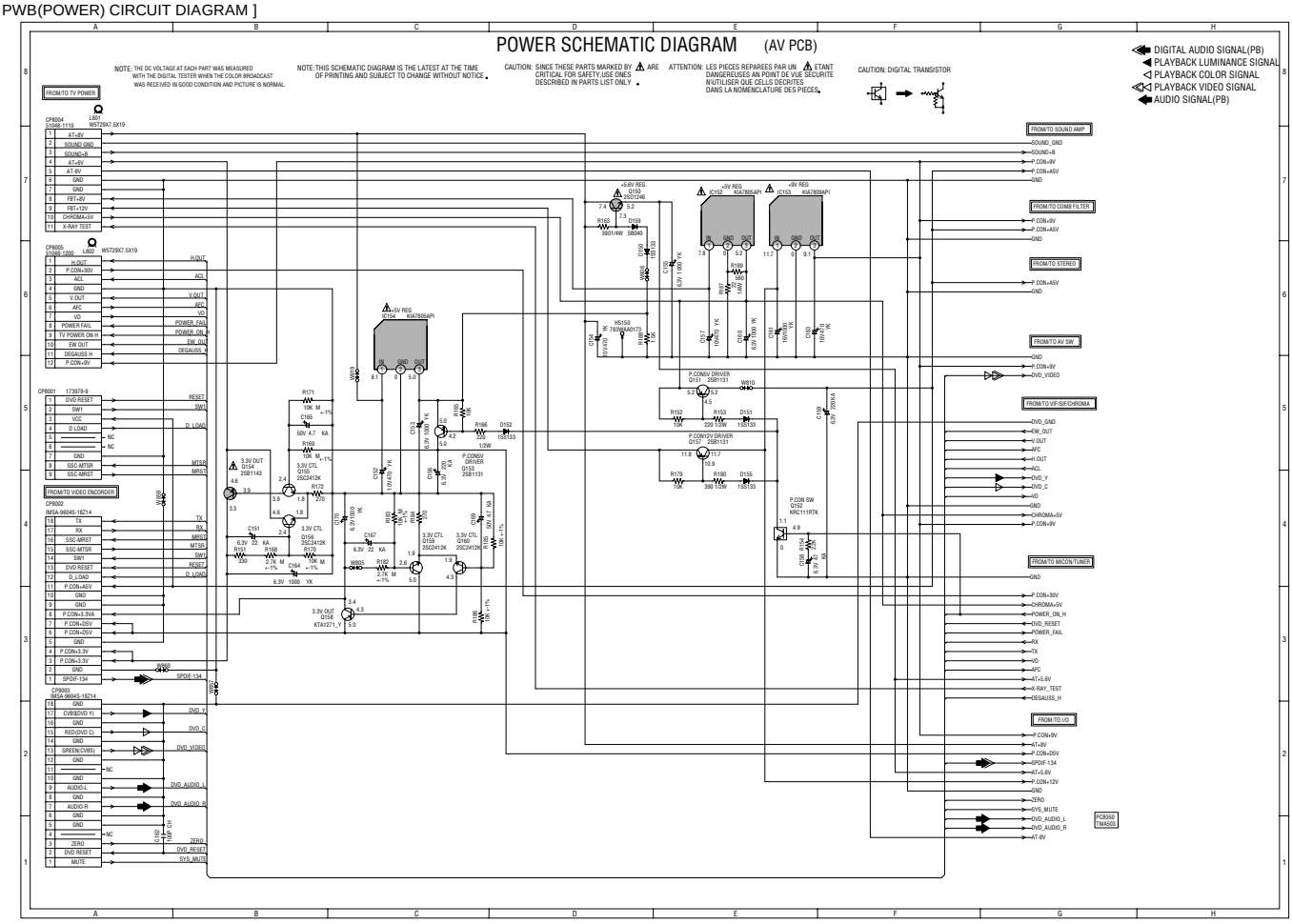
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB010
VMA215

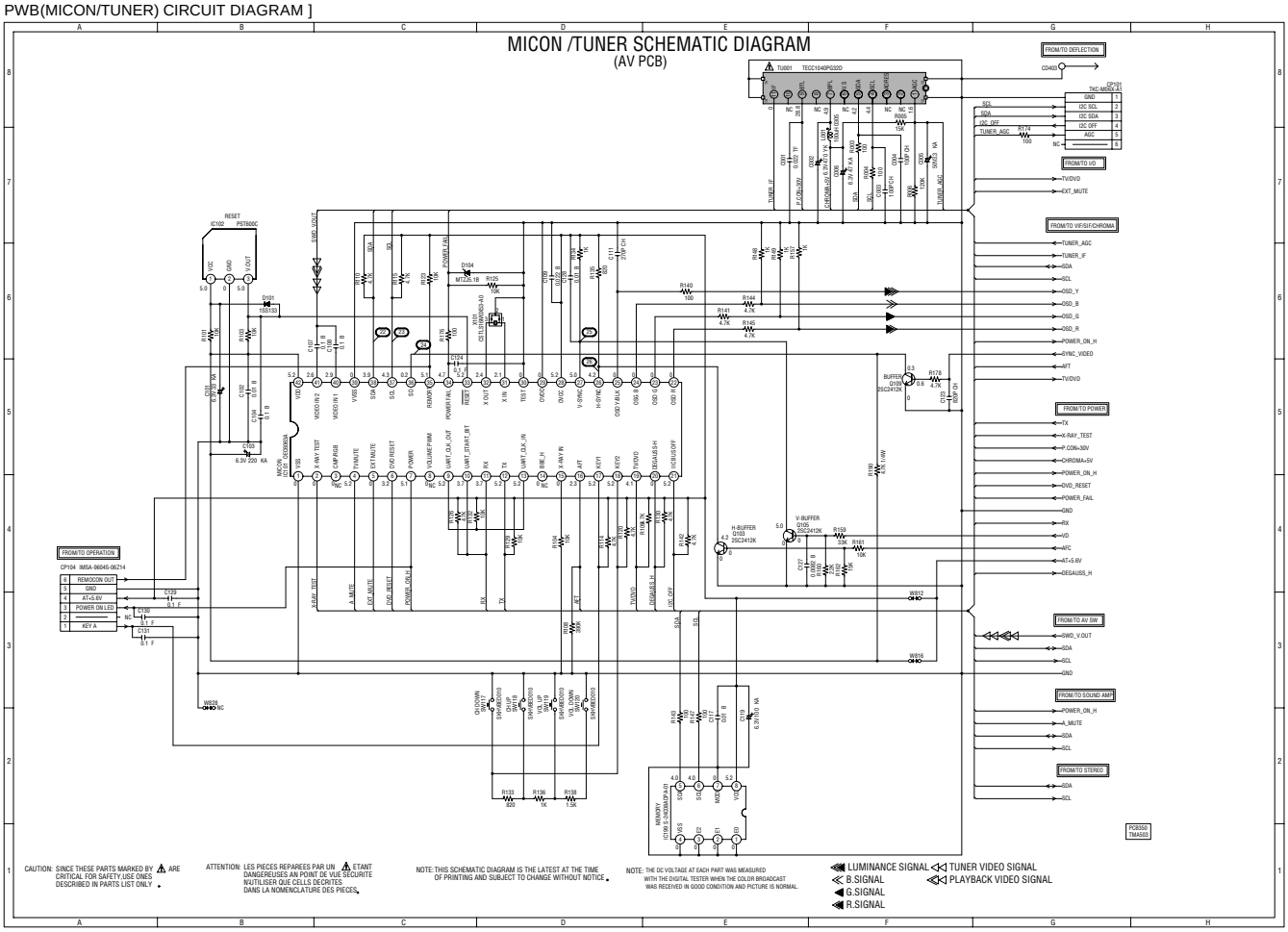
[SYSCON PWB(VIDEO ENCODER) CIRCUIT DIAGRAM]


VIDEO ENCORDER SCHEMATIC DIAGRAM
(SYSCON PCB)
FROM/TO MPEG
FROM/TO SDRAM
FROM/TO SYSCON
FROM/TO POWER
VIDEO ENCODER
ICB501
BT866AKRF
DIGITAL AUDIO SIGNAL(PB)
RECORD COLOR SIGNAL
PLAYBACK LUMINANCE SIGNAL
PLAYBACK COLOR SIGNAL
AUDIO SIGNAL(PB)
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

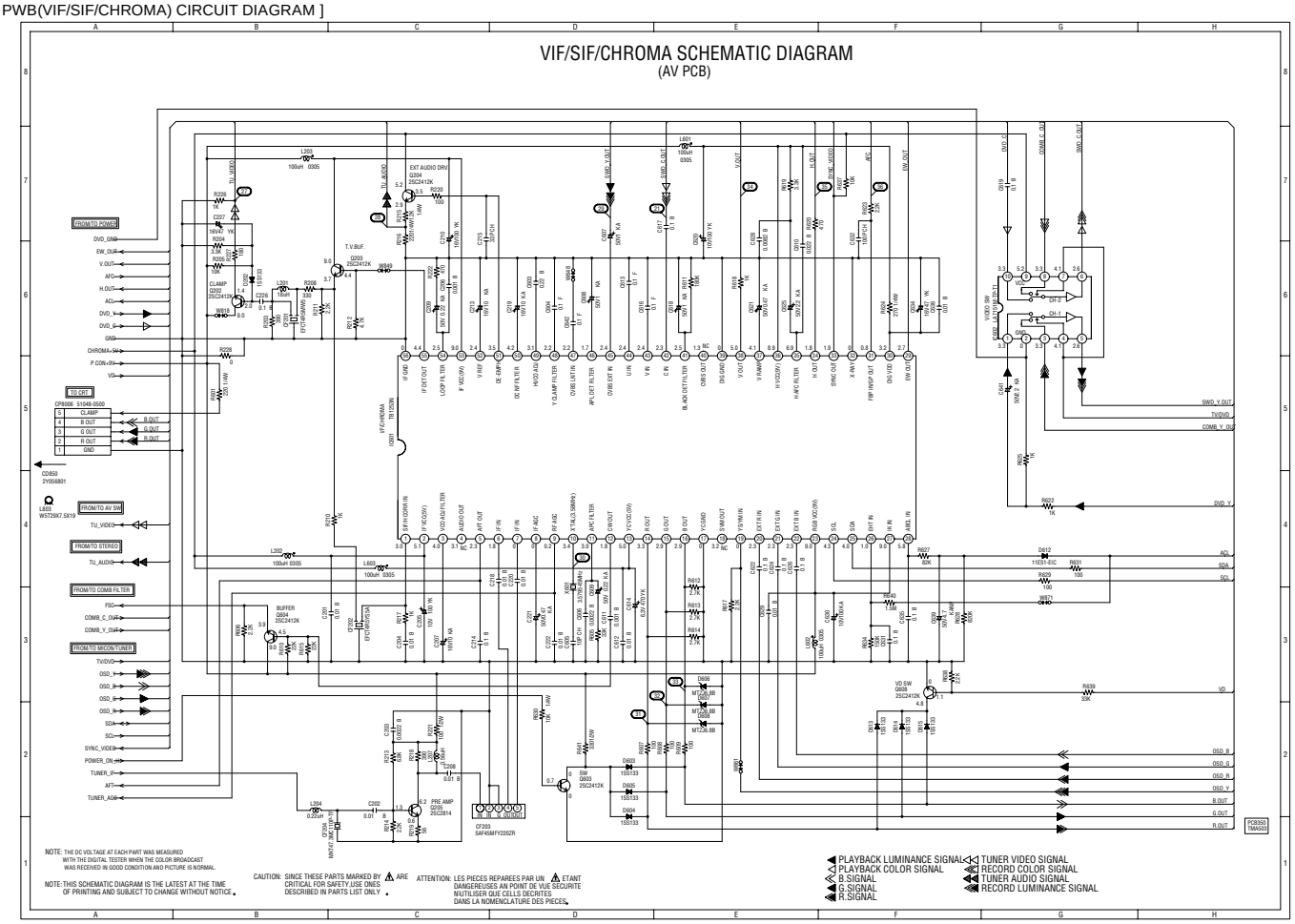
[AV PWB(POWER) CIRCUIT DIAGRAM]


POWER SCHEMATIC DIAGRAM (AV PCB)
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
CAUTION: DIGITAL TRANSISTOR
DIGITAL AUDIO SIGNAL(PB)
PLAYBACK LUMINANCE SIGNAL
PLAYBACK COLOR SIGNAL
PLAYBACK VIDEO SIGNAL
AUDIO SIGNAL(PB)
FROM/TO TV POWER
FROM/TO VIDEO ENCORDER
FROM/TO SOUND AMP
FROM/TO COMB FILTER
FROM/TO STEREO
FROM/TO AV SW
FROM/TO VIF/SIF/CHROMA
FROM/TO MICOM/TUNER
FROM/TO I/O
+5V REG. KIA7805API
+9V REG. KIA7809API
P.CON3V DRIVER
P.CON SW
PCB35S TIM4S05

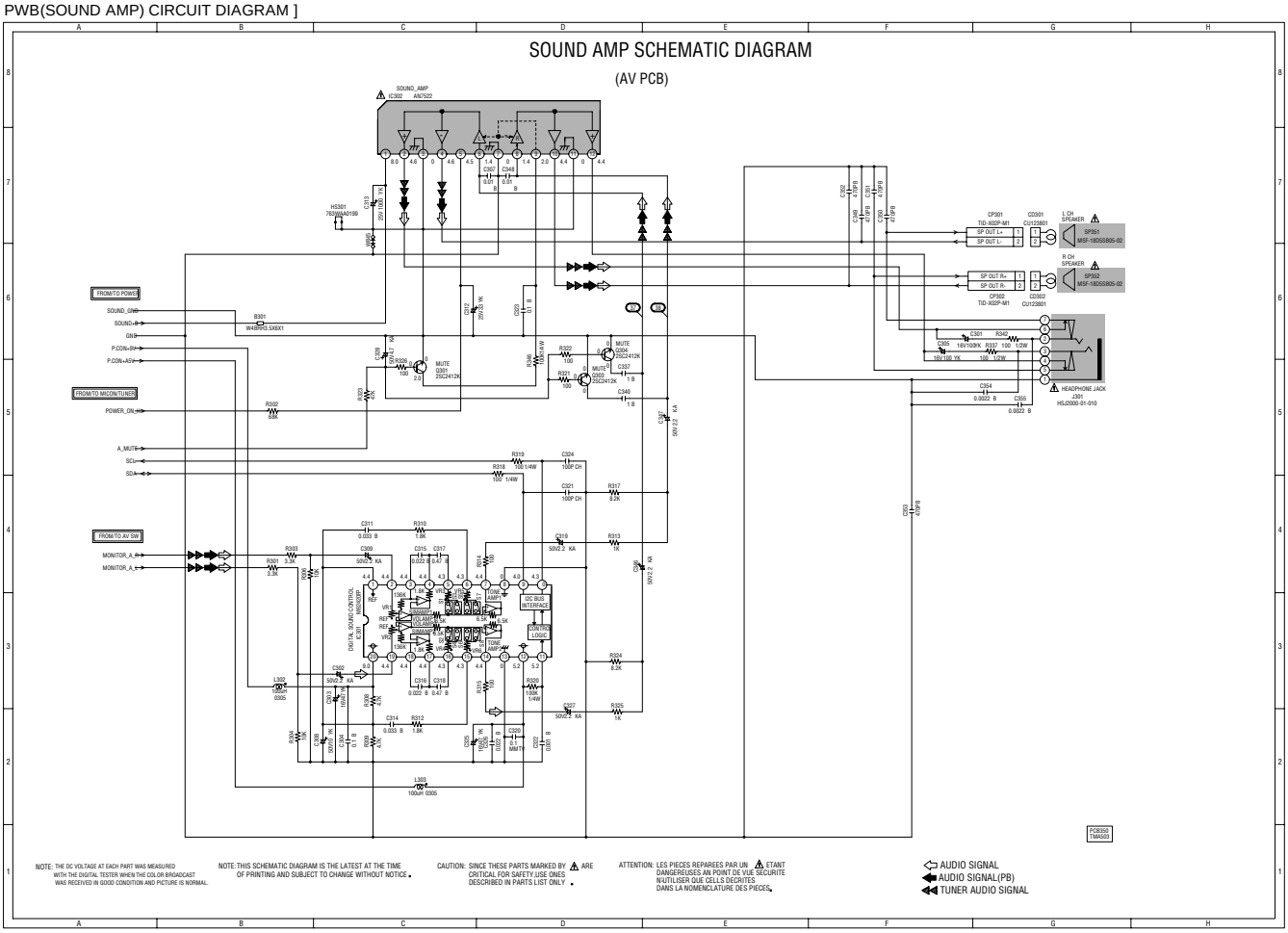
[AV PWB(MICON/TUNER) CIRCUIT DIAGRAM]



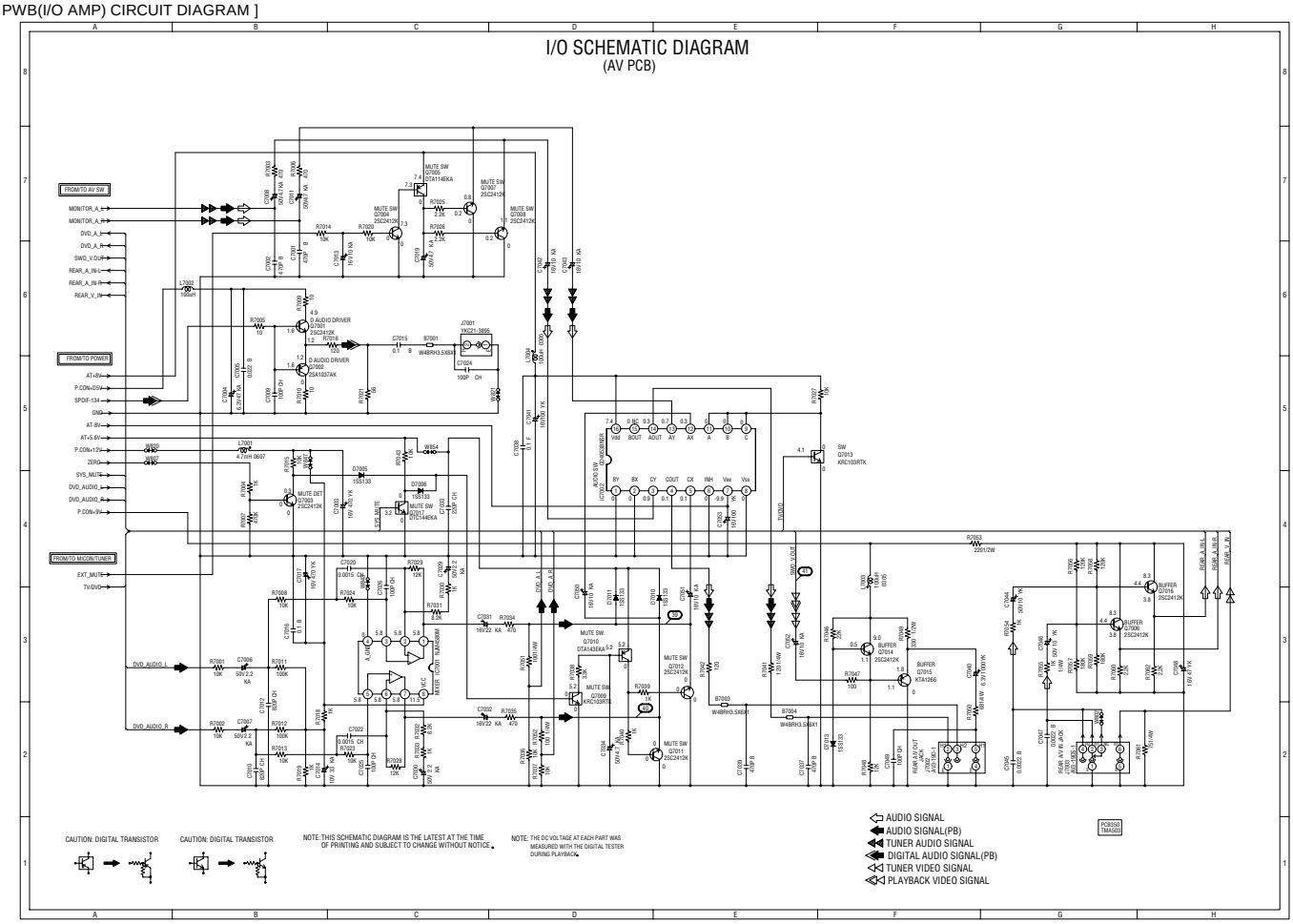
[AV PWB(VIF/SIF/CHROMA) CIRCUIT DIAGRAM]


VIF/SIF/CHROMA SCHEMATIC DIAGRAM
(AV PCB)
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY.USE ONES DESCRIBED IN PARTS LIST ONLY.
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
PLAYBACK LUMINANCE SIGNAL
PLAYBACK COLOR SIGNAL
B.SIGNAL
G.SIGNAL
R.SIGNAL
TUNER VIDEO SIGNAL
RECORD COLOR SIGNAL
TUNER AUDIO SIGNAL
RECORD LUMINANCE SIGNAL
PCB352
TAA320

[AV PWB(SOUND AMP) CIRCUIT DIAGRAM]


SOUND AMP SCHEMATIC DIAGRAM
(AV PCB)
SOUND_AMP
IC302 AN7522
FROM/TO POWER
FROM/TO MICON/TUNER
FROM/TO AV SW
DIGITAL SOUND CONTROL PROCESSOR IC301
I2C BUS INTERFACE
CONTROL LOGIC
TONE AMP
VOLUME AMP
SP901
SP902
SP351
SP352
J301
HEADPHONE JACK
L CH SPEAKER
R CH SPEAKER
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY USE ONES DESCRIBED IN PARTS LIST ONLY.
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
AUDIO SIGNAL
AUDIO SIGNAL(PB)
TUNER AUDIO SIGNAL

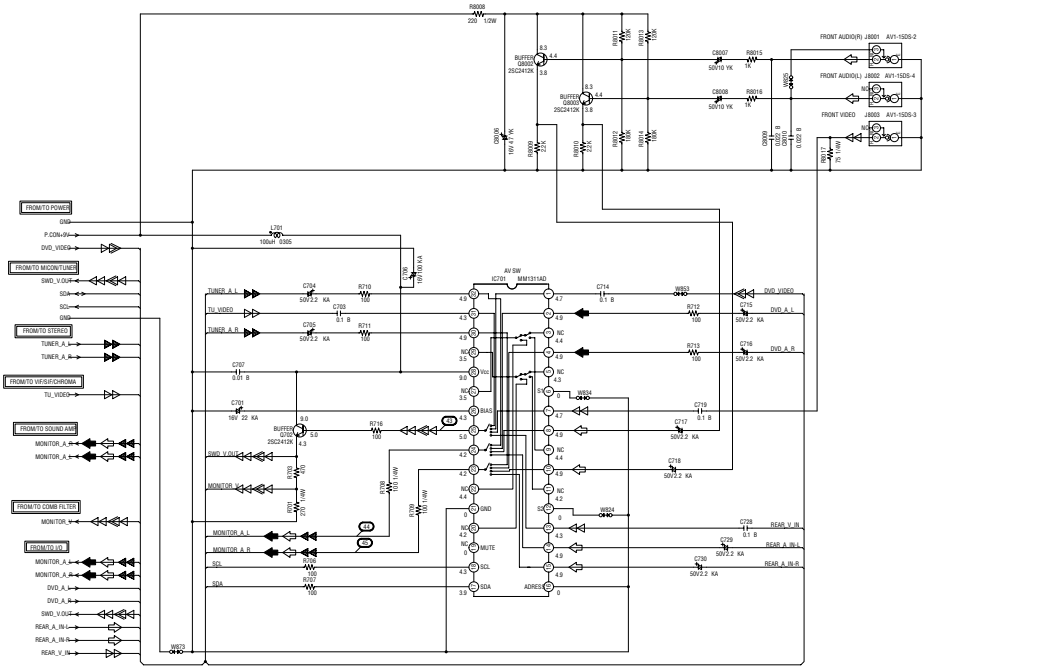
[AV PWB(I/O AMP) CIRCUIT DIAGRAM]



[AV PWB(AV SW) CIRCUIT DIAGRAM]

AV SW SCHEMATIC DIAGRAM

(AV PCB)

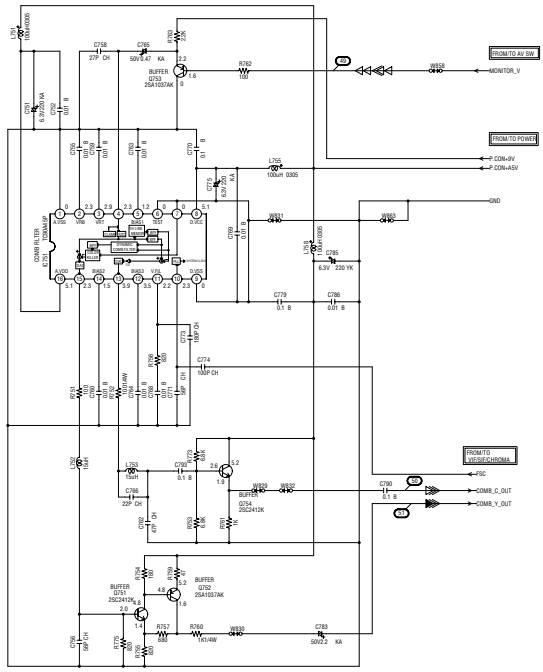


NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

[AV PWB(COMB FILTER) CIRCUIT DIAGRAM]

COMB FILTER SCHEMATIC DIAGRAM
(AV PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

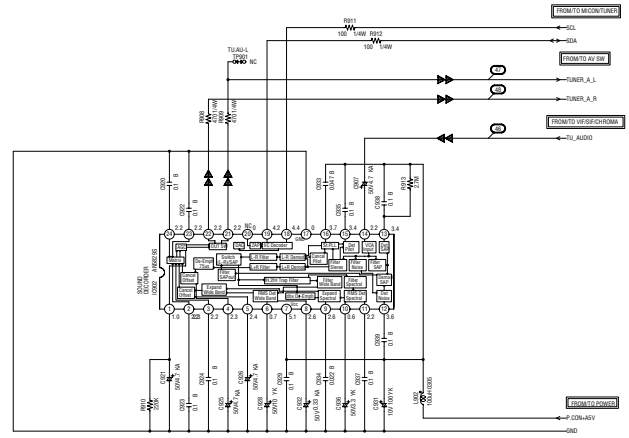
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL
TUNER VIDEO SIGNAL
PLAYBACK VIDEO SIGNAL

[AV PWB(STEREO) CIRCUIT DIAGRAM]

STEREO SCHEMATIC DIAGRAM

(AV PCB)



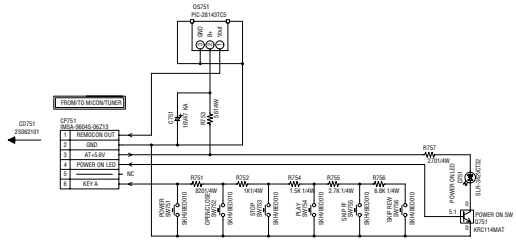
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

◀◀ TUNER AUDIO SIGNAL

[OPERATON PWB CIRCUIT DIAGRAM]

OPERATION SCHEMATIC DIAGRAM
(OPERATION PCB)



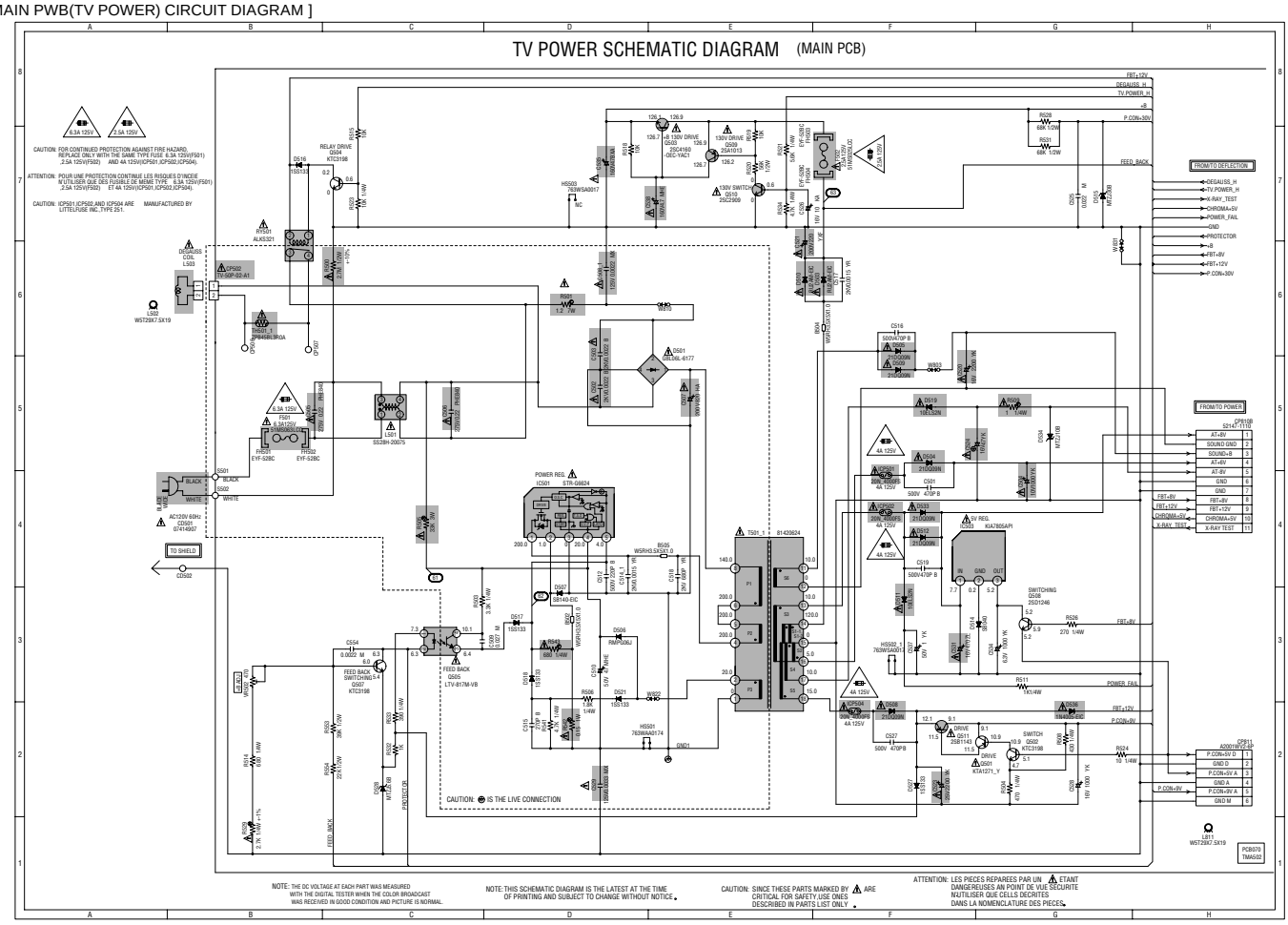
CAUTION: DIGITAL TRANSISTOR

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

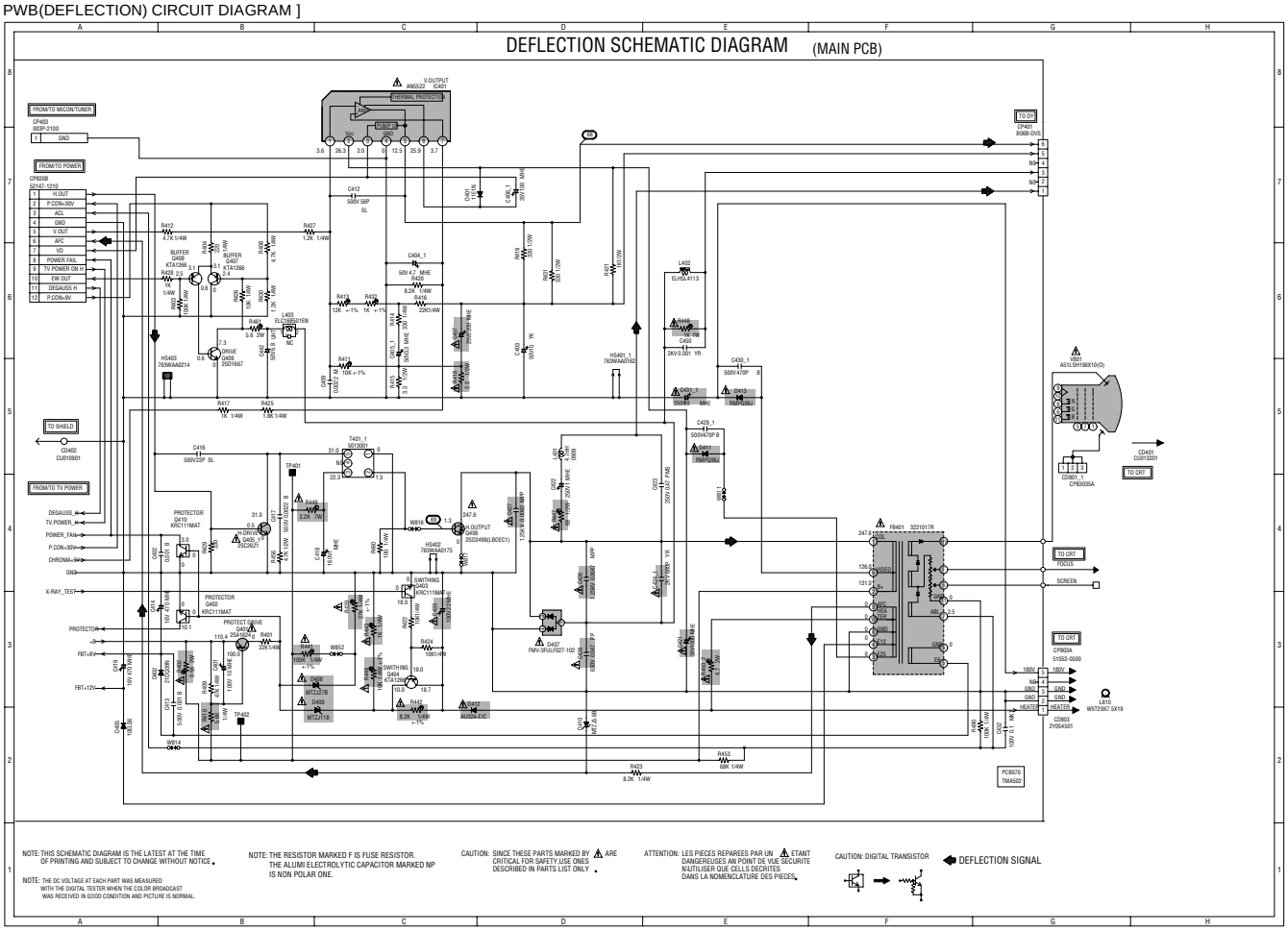
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

PCB030
TEA465

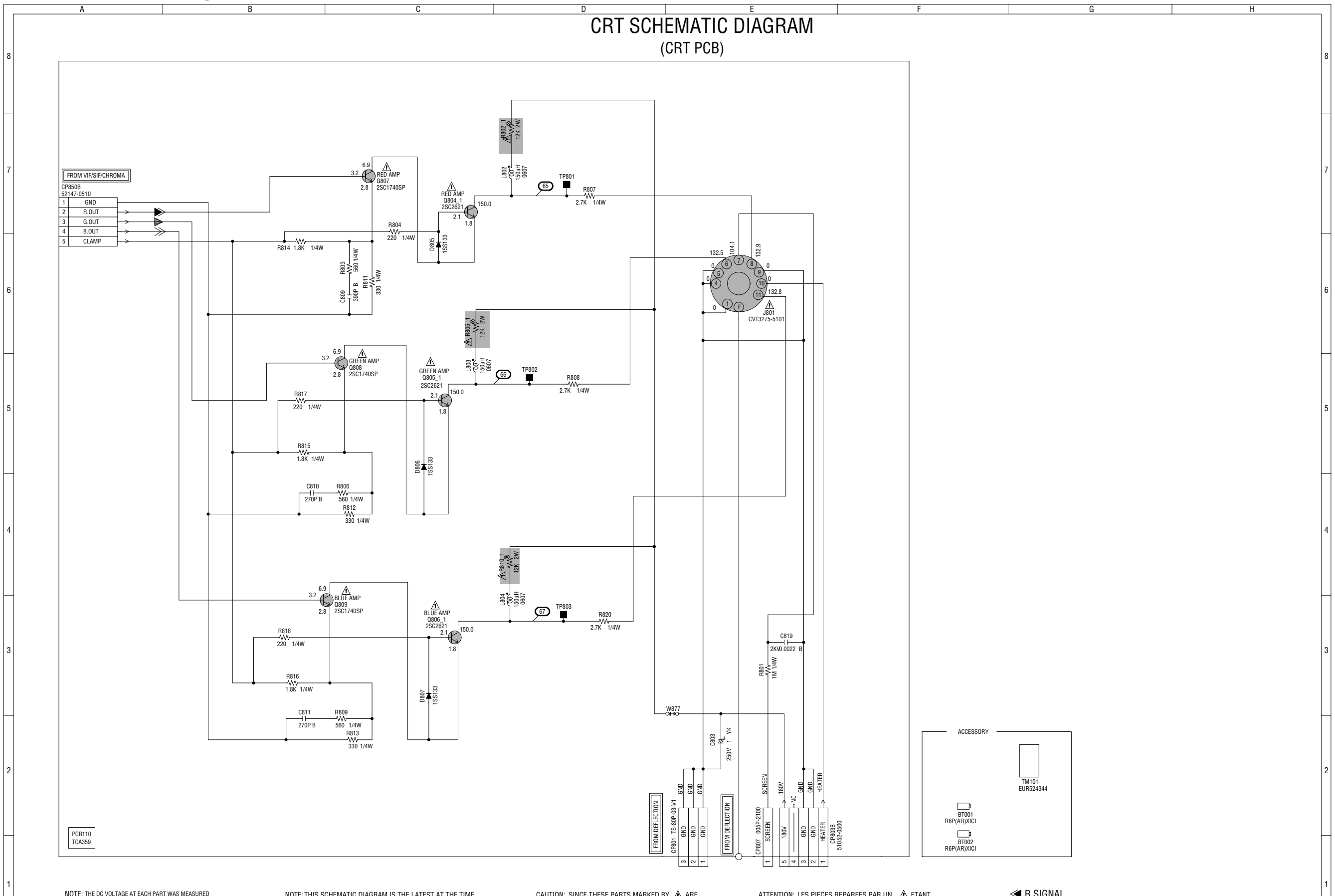
[MAIN PWB(TV POWER) CIRCUIT DIAGRAM]


TV POWER SCHEMATIC DIAGRAM (MAIN PCB)
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 6.3A 125V(F501) ,2.5A 125V(F502) AND 4A 125V(ICP501,ICP502,ICP504).
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCIDIE N'UTILISER QUE DES FUSIBLE DE MEME TYPE 6.3A 125V(F501) ,2.5A 125V(F502) ET 4A 125V(ICP501,ICP502,ICP504).
CAUTION: ICP501,ICP502,AND ICP504 ARE MANUFACTURED BY LITTELFUSE INC.,TYPE 251.
CAUTION: ⊕ IS THE LIVE CONNECTION
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.
NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY.USE ONES DESCRIBED IN PARTS LIST ONLY.
ATTENTION: LES PIECES REPAIREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
FROM/TO DEFLECTION
FROM/TO POWER
TO SHIELD
PCB976 TMAG02

[MAIN PWB(DEFLECTION) CIRCUIT DIAGRAM]


DEFLECTION SCHEMATIC DIAGRAM (MAIN PCB)
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.
NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY USE ONES DESCRIBED IN PARTS LIST ONLY.
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
CAUTION: DIGITAL TRANSISTOR
DEFLECTION SIGNAL

[CRT PWB CIRCUIT DIAGRAM]


CRT SCHEMATIC DIAGRAM
(CRT PCB)
FROM VIF/SIF/CHROMA
CP850B
52147-0510
1 GND
2 R.OUT
3 G.OUT
4 B.OUT
5 CLAMP
RED AMP Q807 2SC1740SP
GREEN AMP Q808 2SC1740SP
BLUE AMP Q809 2SC1740SP
RED AMP Q804_1 2SC2621
GREEN AMP Q805_1 2SC2621
BLUE AMP Q806_1 2SC2621
R802_1 12K 2W
R805_1 12K 2W
R810_1 12K 2W
L802 150uH 0607
L803 150uH 0607
L804 150uH 0607
TP801
TP802
TP803
R807 2.7K 1/4W
R808 2.7K 1/4W
R820 2.7K 1/4W
R804 220 1/4W
R814 1.8K 1/4W
R803 560 1/4W
R811 330 1/4W
C809 390P B
D805 1SS133
D806 1SS133
D807 1SS133
R817 220 1/4W
R815 1.8K 1/4W
C810 270P B
R806 560 1/4W
R812 330 1/4W
R818 220 1/4W
R816 1.8K 1/4W
C811 270P B
R809 560 1/4W
R813 330 1/4W
J801
CVT3275-5101
C819 2KV0.0022 B
R801 1M 1/4W
W877
C803 250V 1 YK
FROM DEFLECTION
CP801 TS-80P-03-V1
GND
SCREEN
CP807 005P-2100
180V
NC
HEATER
CP803B
51052-0500
PCB110
TCA359
ACCESSORY
TM101
EUR524344
BT001
R6P(AR)XICI
BT002
R6P(AR)XICI

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

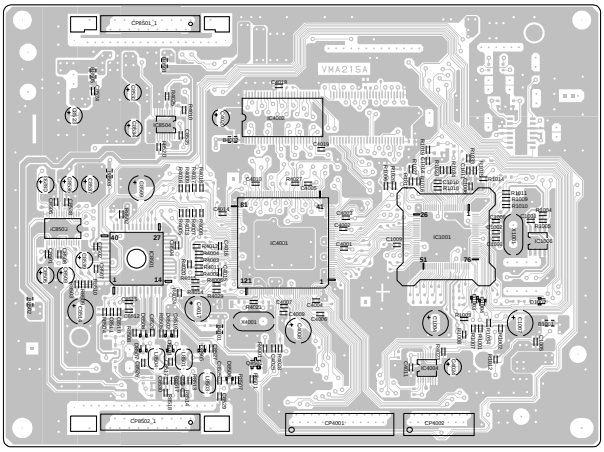
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

R.SIGNAL
G.SIGNAL
B.SIGNAL

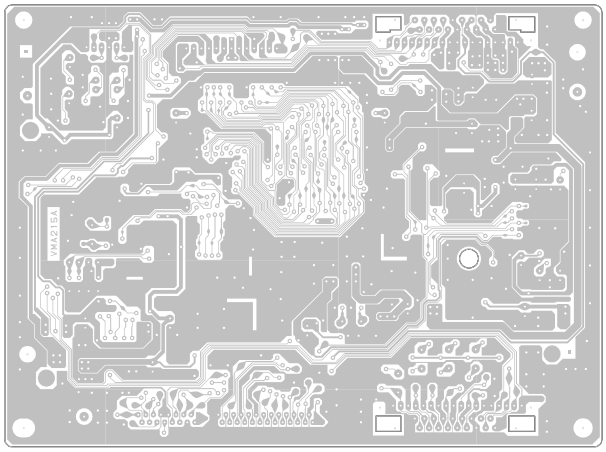
PATTERN DIAGRAMS

[SYSCON PWB PATTERN]

(TOP SIDE)

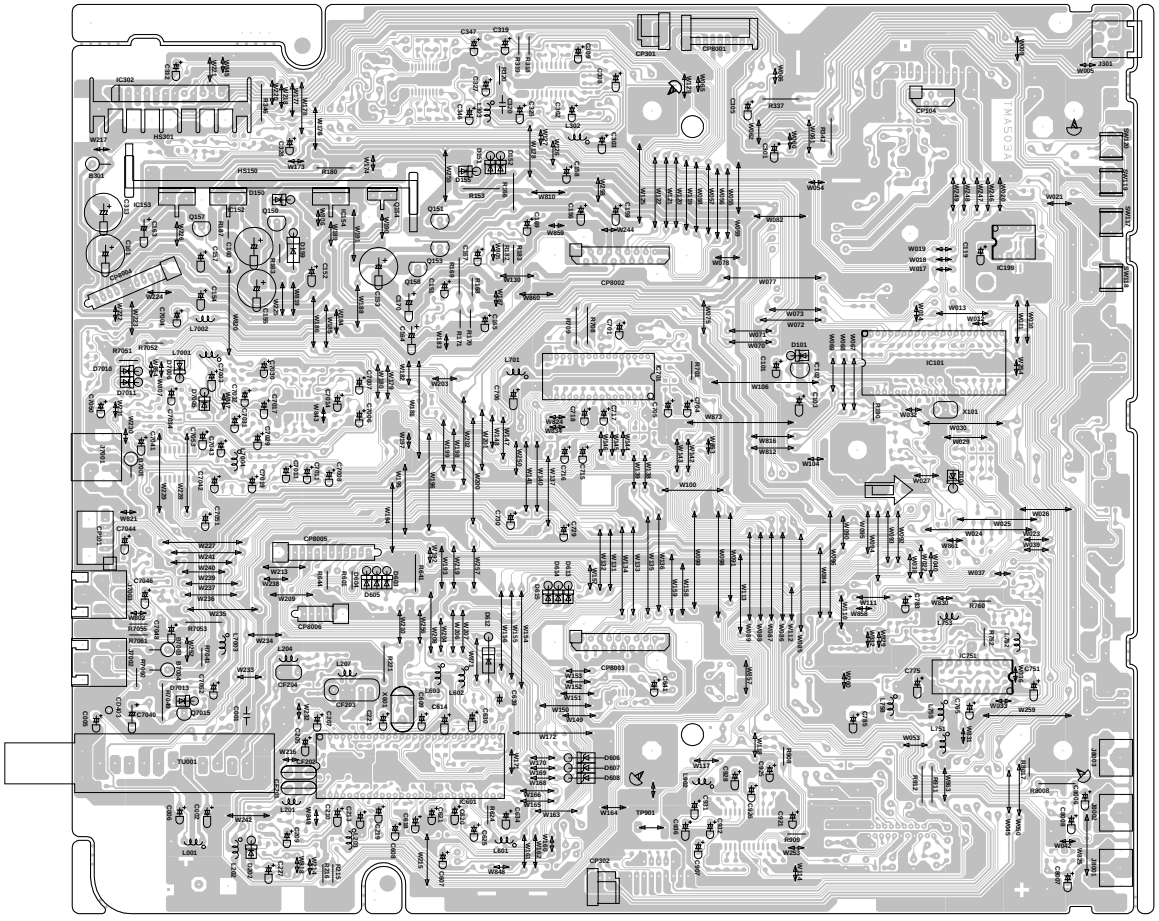


(BOTTOM SIDE)



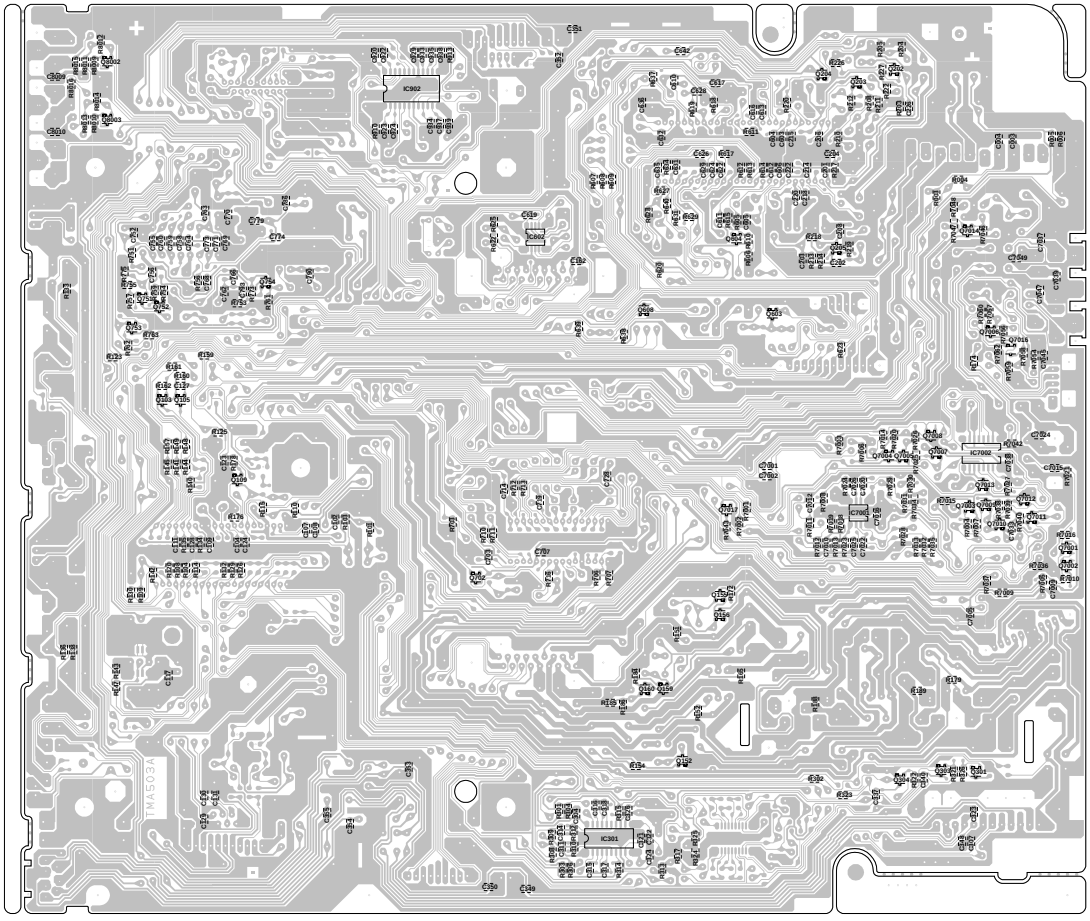
[AV PWB PATTERN(INSERTED PARTS)]

SOLDER SIDE

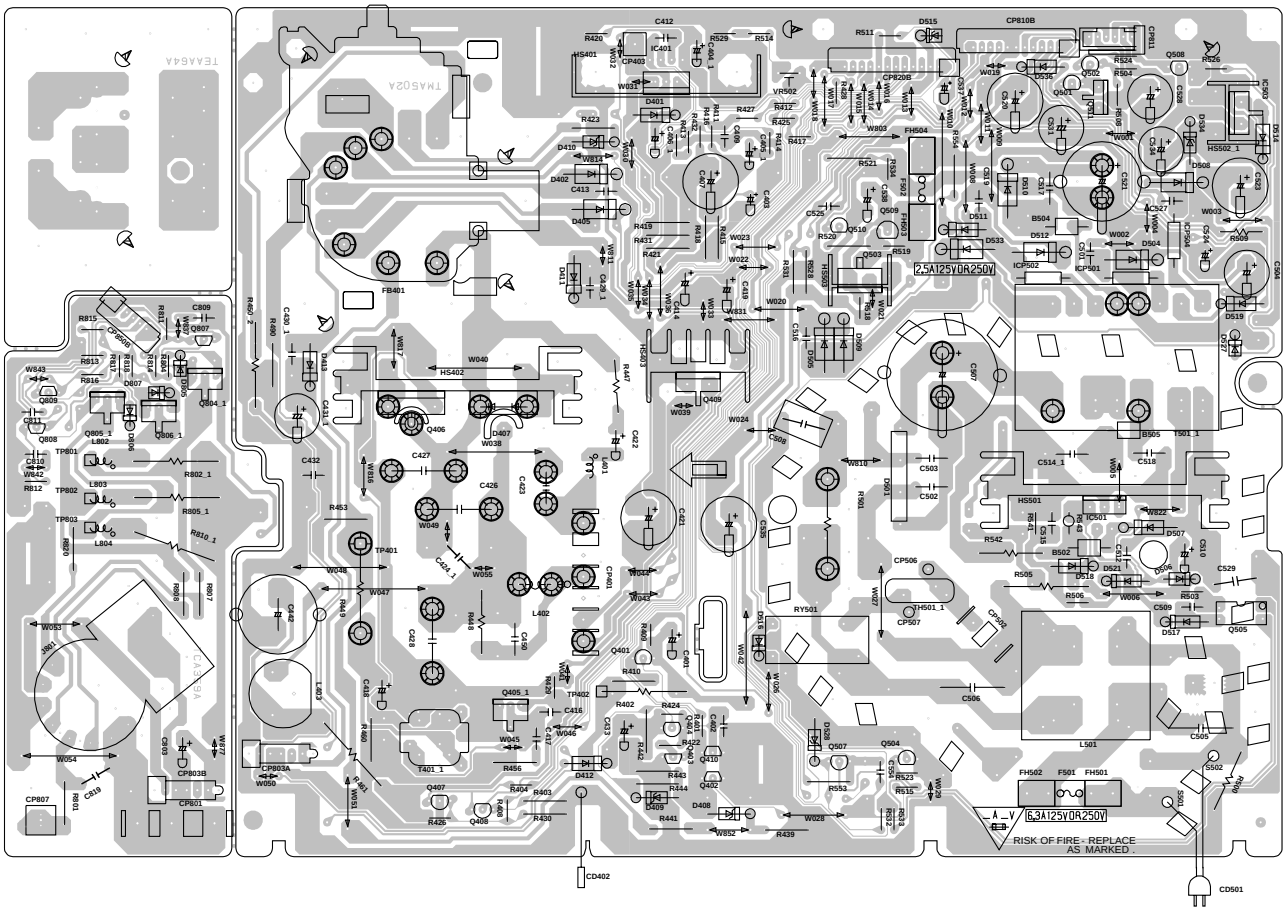


[AV PWB PATTERN(CHIP MOUNTED PARTS)]

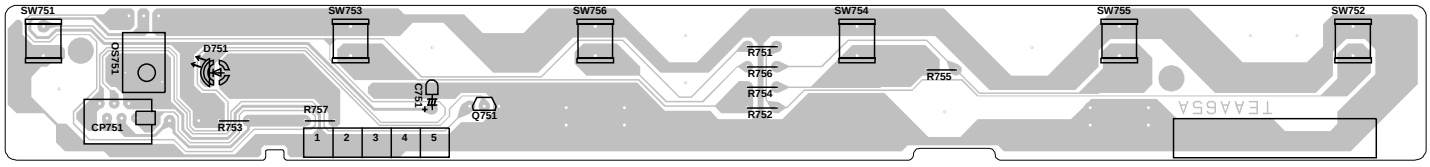
SOLDER SIDE



[MAIN/CRT PWB PATTERN]

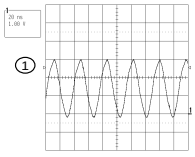


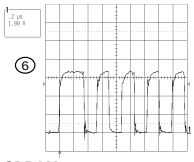
[OPERATION PWB PATTERN]

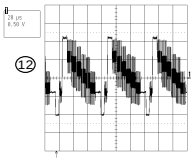


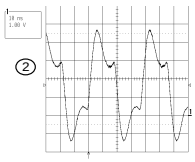
WAVEFORMS

MPEG

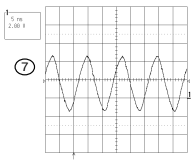




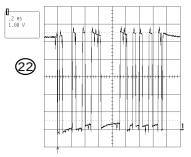


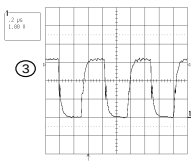


SDRAM

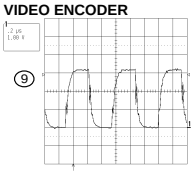


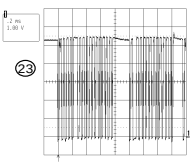
MICON/TUNER

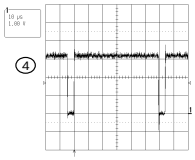


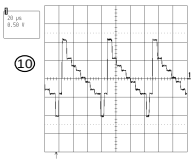


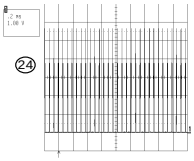
VIDEO ENCODER

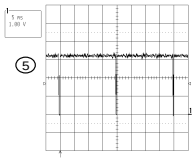


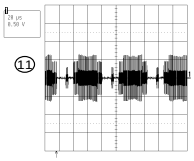


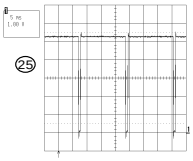




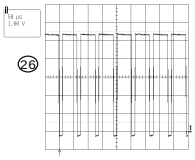


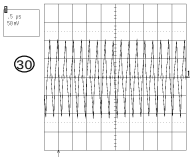


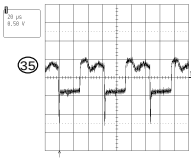




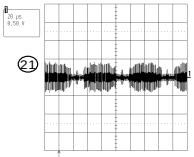
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

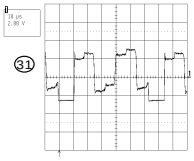


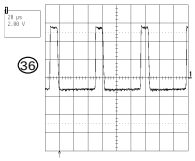




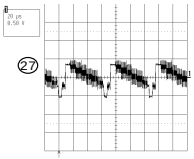
VIF/SIF/CHROMA

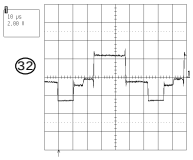


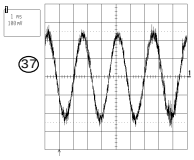


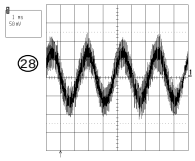


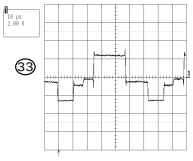
SOUND AMP

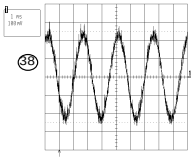




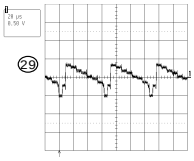


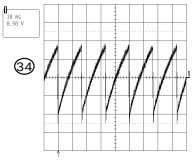


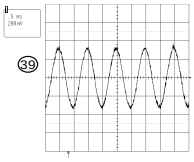




IN/OUT







NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

PARTS LIST

CAUTION

- The parts identified by the ⚠ symbol are important for the safety . Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines --- in the Parts No. columns will not be supplied .
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied .

ABBREVIATIONS OF RESISTORS, CAPACITORS

RESISTOR

RC.....	CARBON RESISTOR

CAPACITORS

CC.....	CERAMIC CAPACITOR
CE.....	ALUMI ELECTROLYTIC CAPACITOR
CP.....	POLYESTER CAPACITOR
CPP.....	POLYPROPYLENE CAPACITOR
CPL.....	PLASTIC CAPACITOR
CMP.....	METAL POLYESTER CAPACITOR
CMPL.....	METAL PLASTIC CAPACITOR
CMPP.....	METAL POLYPROPYLENE CAPACITOR

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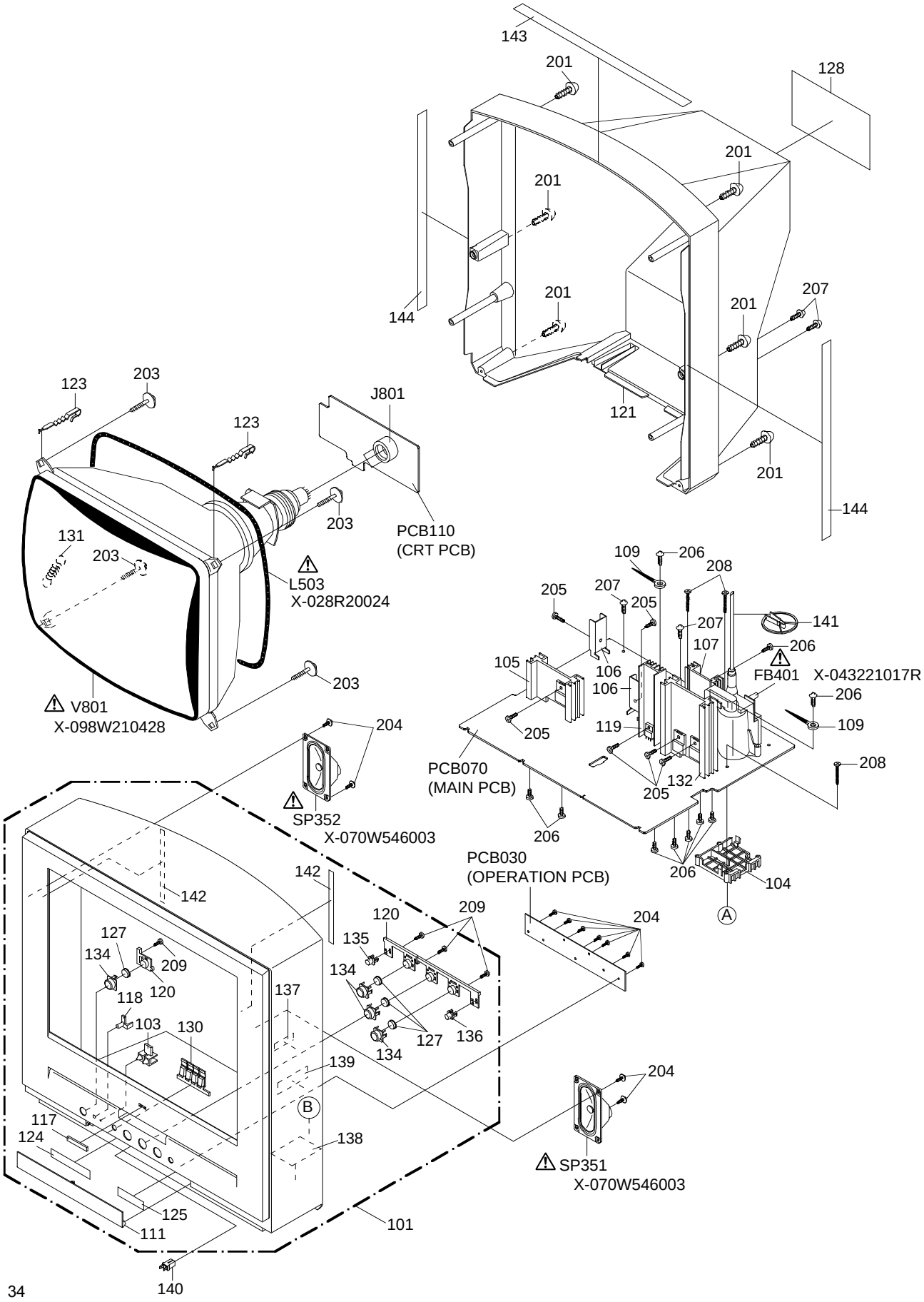
USING P.W. BOARD

Model / P.W.B ASS'Y	AV-20FD22
SYSCON PCB ASS'Y	X-A58701Q01A
OPERATION PCB ASS'Y	X-A58702Q03A
MAIN PCB ASS'Y	X-A58702Q07A
CRT PCB ASS'Y	X-A58702Q11A
AV PCB ASS'Y	X-A58702Q25A

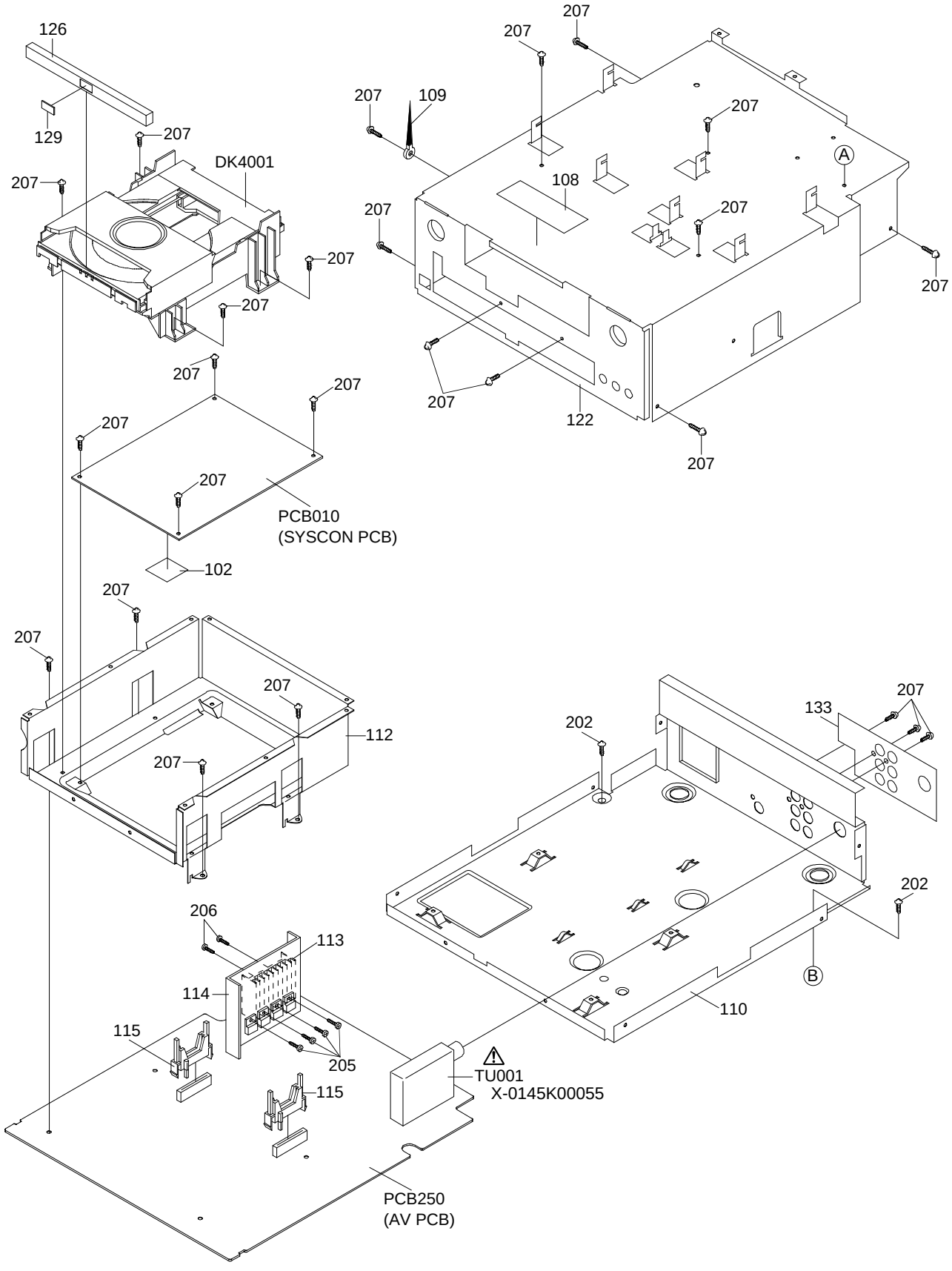
MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION	
101	X-A58702Q720	CABINET,FRONT ASSY	201	X-8117540A64	SCREW,TAPPING(B0) TRUSS	4x16
102	X-7230007172	SHEET,IC	202	X-8117540804	SCREW,TAPPING(B0) TRUSS	4x8
103	X-713WPA0144	GLASS,LED	203	X-8121J50B54	SCREW,TAPPING(B0) GW20	5x28
104	X-761WPA0223	HOLDER,FBT	204	X-8110630A04	SCREW,TAP TITE(P) BRAZIER	3x10
105	X-763WAA0174	HEAT SINK	205	X-8109I30A04	SCREW,TAP TITE(B) WH7	3x10
106	X-763WSA0017	HEAT SINK	206	X-8109630802	SCREW,TAP TITE(B) BRAZIER	3x8
107	X-763WAA0162	HEAT SINK	207	X-8109630604	SCREW,TAP TITE(B) BRAZIER	3x6
108	X-7260000332	SHEET,CAUTION	208	X-8107630B04	SCREW,TAP TITE(S) BRAZIER	3x20
109	X-8995034000	CORD CLIP UL CO.	209	X-8110630804	SCREW,TAP TITE(P) BRAZIER	3x8
110	X-702WSA0076	PLATE,BOTTOM	DK4001	X-169G00006A	DECK,CD	DVD-KIT315SU
111	X-702WPA0807	DOOR				
112	X-761WSA0079	ANGLE,DECK				
113	X-763WAA0173	HEAT SINK				
114	X-763WAA0199	HEAT SINK				
115	X-769WPA0018	GUIDE,CONNECTOR(FFC)				
117	X-7235380003	BRAND,BADGE				
118	X-713WPA0145	GUIDE,REMOCON				
119	X-763WAA0222	HEAT SINK				
120	X-735WPD0732	BUTTON,FRAME				
121	X-702WPA0823	CABINET,BACK				
122	X-702WSA0075	SHIELD,TOP				
123	X-762WPA0011	HOLDER,CRT WIRE				
124	X-7230007285	SHEET,INDICATER				
125	X-7230007286	SHEET,INDICATER(JACK)				
126	X-712WPB0076	PLATE,TRAY-FRONT				
127	X-735WPA0516	BUTTON,CLEAR				
128	X-7225380007	SHEET,RATING				
129	X-7235630001	SHEET,DVD				
130	X-735WPA0543	BUTTON,CHANNEL				
131	X-741WUA0001	SPRING,EARTH				
132	X-763WAA0175	HEAT SINK				
133	X-7230007295	SHEET,JACK				
134	X-735WPE0011	BUTTON,COVER				
135	X-735WPE0014	BUTTON,CAP(STOP)				
136	X-735WPE0015	BUTTON,CAP(OPEN)				
137	X-7220001107	SHEET,HWC				
138	X-7220001119	SHEET,CSA WARNING				
139	X-7230006818	SHEET,CAUTION				
140	X-890LA20000	NC LATCH(LA-2)				
141	X-899HV3T000	HOLDER,ANODE WIRE				
142	X-800WQ00056	FELT SHEET				
143	X-800WQ00039	FELT SHEET				
144	X-800WQ00041	FELT SHEET				

MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW



ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS				**RESISTORS**	
R003	X-R801R7101J	RC	100 OHM 1/10W	R219	X-R801R7560J	RC	56 OHM 1/10W
R004	X-R801R7101J	RC	100 OHM 1/10W	R220	X-R801R7101J	RC	100 OHM 1/10W
R005	X-R801R7153J	RC	15K OHM 1/10W	R221	X-R002T2101J	RC	100 OHM 1/2W
R006	X-R801R7124J	RC	120K OHM 1/10W	R222	X-R801R7471J	RC	470 OHM 1/10W
R101	X-R801R7103J	RC	10K OHM 1/10W	R226	X-R801R7102J	RC	1K OHM 1/10W
R103	X-R801R7103J	RC	10K OHM 1/10W	R227	X-R801R7181J	RC	180 OHM 1/10W
R104	X-R801R7103J	RC	10K OHM 1/10W	R228	X-R801R7000J	RC	0 OHM 1/10W
R108	X-R801R7394J	RC	390K OHM 1/10W	R301	X-R801R7332J	RC	3.3K OHM 1/10W
R109	X-R801R7472J	RC	4.7K OHM 1/10W	R302	X-R801R7683J	RC	68K OHM 1/10W
R110	X-R801R7472J	RC	4.7K OHM 1/10W	R303	X-R801R7332J	RC	3.3K OHM 1/10W
R114	X-R801R7472J	RC	4.7K OHM 1/10W	R304	X-R801R7103J	RC	10K OHM 1/10W
R115	X-R801R7472J	RC	4.7K OHM 1/10W	R306	X-R801R7103J	RC	10K OHM 1/10W
R120	X-R801R7472J	RC	4.7K OHM 1/10W	R308	X-R801R7472J	RC	4.7K OHM 1/10W
R123	X-R801R7103J	RC	10K OHM 1/10W	R309	X-R801R7472J	RC	4.7K OHM 1/10W
R125	X-R801R7103J	RC	10K OHM 1/10W	R310	X-R801R7182J	RC	1.8K OHM 1/10W
R126	X-R801R7472J	RC	4.7K OHM 1/10W	R312	X-R801R7182J	RC	1.8K OHM 1/10W
R129	X-R801R7103J	RC	10K OHM 1/10W	R313	X-R801R7102J	RC	1K OHM 1/10W
R130	X-R801R7472J	RC	4.7K OHM 1/10W	R314	X-R801R7101J	RC	100 OHM 1/10W
R132	X-R801R7103J	RC	10K OHM 1/10W	R315	X-R801R7101J	RC	100 OHM 1/10W
R133	X-R801R7821J	RC	820 OHM 1/10W	R317	X-R801R7822J	RC	8.2K OHM 1/10W
R134	X-R801R7102J	RC	1K OHM 1/10W	R318	X-R002T4101J	RC	100 OHM 1/4W
R135	X-R801R7821J	RC	820 OHM 1/10W	R319	X-R002T4101J	RC	100 OHM 1/4W
R136	X-R801R7102J	RC	1K OHM 1/10W	R320	X-R002T4104J	RC	100K OHM 1/4W
R138	X-R801R7152J	RC	1.5K OHM 1/10W	R321	X-R801R7101J	RC	100 OHM 1/10W
R140	X-R801R7101J	RC	100 OHM 1/10W	R322	X-R801R7101J	RC	100 OHM 1/10W
R141	X-R801R7472J	RC	4.7K OHM 1/10W	R323	X-R801R7473J	RC	47K OHM 1/10W
R142	X-R801R7472J	RC	4.7K OHM 1/10W	R324	X-R801R7822J	RC	8.2K OHM 1/10W
R143	X-R801R7101J	RC	100 OHM 1/10W	R325	X-R801R7102J	RC	1K OHM 1/10W
R144	X-R801R7472J	RC	4.7K OHM 1/10W	R326	X-R801R7101J	RC	100 OHM 1/10W
R145	X-R801R7472J	RC	4.7K OHM 1/10W	R337	X-R002T2101J	RC	100 OHM 1/2W
R147	X-R801R7101J	RC	100 OHM 1/10W	R342	X-R002T2101J	RC	100 OHM 1/2W
R148	X-R801R7102J	RC	1K OHM 1/10W	R346	X-R002T4104J	RC	100K OHM 1/4W
R149	X-R801R7102J	RC	1K OHM 1/10W	R401	X-R002T4223J	RC	22K OHM 1/4W
R151	X-R801R7331J	RC	330 OHM 1/10W	⚠ R402	X-R3X18AR56J	R,METAL OXIDE	0.56 OHM 2W
R152	X-R801R7103J	RC	10K OHM 1/10W	R403	X-R002T4104J	RC	100K OHM 1/4W
R153	X-R002T2221J	RC	220 OHM 1/2W	R404	X-R002T4221J	RC	220 OHM 1/4W
R154	X-R801R7222J	RC	2.2K OHM 1/10W	R408	X-R002T4472J	RC	4.7K OHM 1/4W
R157	X-R801R7102J	RC	1K OHM 1/10W	R409	X-R002T4473J	RC	47K OHM 1/4W
R159	X-R801R7333J	RC	33K OHM 1/10W	⚠ R410	X-R002T4562J	RC	5.6K OHM 1/4W
R160	X-R801R7222J	RC	2.2K OHM 1/10W	R411	X-R4X5T6103F	R,METAL	10K OHM 1/6W
R161	X-R801R7103J	RC	10K OHM 1/10W	R412	X-R002T4472J	RC	4.7K OHM 1/4W
R162	X-R801R7153J	RC	15K OHM 1/10W	R413	X-R4X5T6123F	R,METAL	12K OHM 1/6W
R163	X-R002T4391J	RC	390 OHM 1/4W	R414	X-R002T4331J	RC	330 OHM 1/4W
R165	X-R801R7103J	RC	10K OHM 1/10W	R415	X-R002T23R3J	RC	3.3 OHM 1/2W
R166	X-R002T2221J	RC	220 OHM 1/2W	R416	X-R002T4223J	RC	22K OHM 1/4W
R168	X-R4X5T6272F	R,METAL	2.7K OHM 1/6W	R417	X-R002T4102J	RC	1K OHM 1/4W
R169	X-R4X5T6103F	R,METAL	10K OHM 1/6W	⚠ R418	X-R002T22R2J	RC	2.2 OHM 1/2W
R170	X-R4X5T6103F	R,METAL	10K OHM 1/6W	R419	X-R002T2331J	RC	330 OHM 1/2W
R171	X-R4X5T6103F	R,METAL	10K OHM 1/6W	R420	X-R002T4822J	RC	8.2K OHM 1/4W
R172	X-R801R7271J	RC	270 OHM 1/10W	R421	X-R002T2102J	RC	1K OHM 1/2W
R174	X-R801R7101J	RC	100 OHM 1/10W	R422	X-R002T4103J	RC	10K OHM 1/4W
R176	X-R801R7101J	RC	100 OHM 1/10W	R423	X-R002T4822J	RC	8.2K OHM 1/4W
R178	X-R801R7472J	RC	4.7K OHM 1/10W	R424	X-R002T4103J	RC	10K OHM 1/4W
R179	X-R801R7103J	RC	10K OHM 1/10W	R425	X-R002T4182J	RC	1.8K OHM 1/4W
R180	X-R002T2391J	RC	390 OHM 1/2W	R426	X-R002T4103J	RC	10K OHM 1/4W
R182	X-R4X5T6272F	R,METAL	2.7K OHM 1/6W	R427	X-R002T4122J	RC	1.2K OHM 1/4W
R183	X-R4X5T6103F	R,METAL	10K OHM 1/6W	R428	X-R002T4102J	RC	1K OHM 1/4W
R184	X-R801R7271J	RC	270 OHM 1/10W	R429	X-R002T4331J	RC	330 OHM 1/4W
R185	X-R801R7103F	RC	10K OHM 1/10W	R430	X-R002T4122J	RC	1.2K OHM 1/4W
R186	X-R801R7103F	RC	10K OHM 1/10W	R431	X-R002T2331J	RC	330 OHM 1/2W
R187	X-R002T4220J	RC	22 OHM 1/4W	R432	X-R4X5T6102F	R,METAL	1K OHM 1/6W
R188	X-R801R7152J	RC	1.5K OHM 1/10W	⚠ R439	X-R4X5T4273F	R,METAL	27K OHM 1/4W
R189	X-R801R7561J	RC	560 OHM 1/10W	⚠ R441	X-R4X5T4104F	R,METAL	100K OHM 1/4W
R190	X-R002T4472J	RC	4.7K OHM 1/4W	⚠ R442	X-R4X5T4822F	R,METAL	8.2K OHM 1/4W
R203	X-R801R7391J	RC	390 OHM 1/10W	⚠ R443	X-R4X5T4102F	R,METAL	1K OHM 1/4W
R204	X-R801R7332J	RC	3.3K OHM 1/10W	⚠ R444	X-R4X5T4103F	R,METAL	10K OHM 1/4W
R205	X-R801R7103J	RC	10K OHM 1/10W	⚠ R447	X-R65582680J	R,FUSE	68 OHM 1/2W
R208	X-R801R7331J	RC	330 OHM 1/10W	⚠ R448	X-R3X181102J	R,METAL OXIDE	1K OHM 1W
R210	X-R801R7102J	RC	1K OHM 1/10W	⚠ R449	X-R5W1CE222J	R,CEMENT	2.2K OHM 7W
R211	X-R801R7222J	RC	2.2K OHM 1/10W	⚠ R450	X-R6358A4R7J	R,FUSE	4.7 OHM 2W
R212	X-R801R7472J	RC	4.7K OHM 1/10W	R453	X-R002T4683J	RC	68K OHM 1/4W
R213	X-R801R7682J	RC	6.8K OHM 1/10W	R456	X-R002T2472J	RC	4.7K OHM 1/2W
R214	X-R801R7222J	RC	2.2K OHM 1/10W	R460	X-R002T4101J	RC	100 OHM 1/4W
R215	X-R002T4122J	RC	1.2K OHM 1/4W	R461	X-R3X18A5R6J	R,METAL OXIDE	5.6 OHM 2W
R216	X-R002T4221J	RC	220 OHM 1/4W	R490	X-R002T4104J	RC	100K OHM 1/4W
R217	X-R801R7102J	RC	1K OHM 1/10W	⚠ R500	X-R21202275K	R,SOLID	2.7M OHM 1/2W
R218	X-R801R7391J	RC	390 OHM 1/10W	⚠ R501	X-R5W2CE1R2J	R,CEMENT	1.2 OHM 7W

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS				**RESISTORS**	
R503	X-R002T4332J	RC	3.3K OHM 1/4W	R755	X-R002T4272J	RC	2.7K OHM 1/4W
R504	X-R002T4471J	RC	470 OHM 1/4W	R755	X-R801R7821J	RC	820 OHM 1/10W
⚠ R505	X-R3X28B333J	R,METAL OXIDE	33K OHM 3W	R756	X-R002T4682J	RC	6.8K OHM 1/4W
R506	X-R002T4182J	RC	1.8K OHM 1/4W	R756	X-R801R7821J	RC	820 OHM 1/10W
R508	X-R002T4431J	RC	430 OHM 1/4W	R757	X-R002T4271J	RC	270 OHM 1/4W
⚠ R509	X-R65584010J	R,FUSE	1 OHM 1/4W	R757	X-R801R7681J	RC	680 OHM 1/10W
R511	X-R002T4102J	RC	1K OHM 1/4W	R759	X-R801R7470J	RC	47 OHM 1/10W
R514	X-R002T4681J	RC	680 OHM 1/4W	R760	X-R002T4102J	RC	1K OHM 1/4W
R515	X-R002T4103J	RC	10K OHM 1/4W	R761	X-R801R7102J	RC	1K OHM 1/10W
R518	X-R002T4103J	RC	10K OHM 1/4W	R762	X-R801R7101J	RC	100 OHM 1/10W
R519	X-R002T4103J	RC	10K OHM 1/4W	R763	X-R801R7222J	RC	2.2K OHM 1/10W
R520	X-R002T2563J	RC	56K OHM 1/2W	R773	X-R801R7682J	RC	6.8K OHM 1/10W
R521	X-R002T4562J	RC	5.6K OHM 1/4W	R775	X-R801R7821J	RC	820 OHM 1/10W
R523	X-R002T4103J	RC	10K OHM 1/4W	R801	X-R002T4105J	RC	1M OHM 1/4W
R524	X-R002T4100J	RC	10 OHM 1/4W	⚠ R802	X-R3X18A123J	R,METAL OXIDE	12K OHM 2W
R526	X-R002T4271J	RC	270 OHM 1/4W	R803	X-R002T4561J	RC	560 OHM 1/4W
R528	X-R002T2683J	RC	68K OHM 1/2W	R804	X-R002T4221J	RC	220 OHM 1/4W
⚠ R529	X-R412T4272F	R,METAL	2.7K OHM 1/4W	⚠ R805	X-R3X18A123J	R,METAL OXIDE	12K OHM 2W
R531	X-R002T2683J	RC	68K OHM 1/2W	R806	X-R002T4561J	RC	560 OHM 1/4W
R532	X-R002T4102J	RC	1K OHM 1/4W	R807	X-R002T4272J	RC	2.7K OHM 1/4W
R533	X-R002T4391J	RC	390 OHM 1/4W	R808	X-R002T4272J	RC	2.7K OHM 1/4W
R534	X-R002T4472J	RC	4.7K OHM 1/4W	R809	X-R002T4561J	RC	560 OHM 1/4W
R541	X-R002T4472J	RC	4.7K OHM 1/4W	⚠ R810	X-R3X18A123J	R,METAL OXIDE	12K OHM 2W
⚠ R542	X-R33681R15J	R,METAL	0.15OHM 1W	R811	X-R002T4331J	RC	330 OHM 1/4W
⚠ R543	X-R635U4681J	R,FUSE	680 OHM 1/4W	R812	X-R002T4331J	RC	330 OHM 1/4W
R553	X-R002T2393J	RC	39K OHM 1/2W	R813	X-R002T4331J	RC	330 OHM 1/4W
R554	X-R002T2223J	RC	22K OHM 1/2W	R814	X-R002T4182J	RC	1.8K OHM 1/4W
R601	X-R002T4221J	RC	220 OHM 1/4W	R815	X-R002T4182J	RC	1.8K OHM 1/4W
R605	X-R801R7333J	RC	33K OHM 1/10W	R816	X-R002T4182J	RC	1.8K OHM 1/4W
R606	X-R801R7222J	RC	2.2K OHM 1/10W	R817	X-R002T4221J	RC	220 OHM 1/4W
R607	X-R801R7101J	RC	100 OHM 1/10W	R818	X-R002T4221J	RC	220 OHM 1/4W
R608	X-R801R7101J	RC	100 OHM 1/10W	R820	X-R002T4272J	RC	2.7K OHM 1/4W
R609	X-R801R7101J	RC	100 OHM 1/10W	R908	X-R002T4471J	RC	470 OHM 1/4W
R610	X-R801R7223J	RC	22K OHM 1/10W	R909	X-R002T4471J	RC	470 OHM 1/4W
R611	X-R801R7184J	RC	180K OHM 1/10W	R910	X-R801R7224J	RC	220K OHM 1/10W
R612	X-R801R7272J	RC	2.7K OHM 1/10W	R911	X-R002T4101J	RC	100 OHM 1/4W
R613	X-R801R7272J	RC	2.7K OHM 1/10W	R912	X-R002T4101J	RC	100 OHM 1/4W
R614	X-R801R7272J	RC	2.7K OHM 1/10W	R913	X-R801R7275J	RC	2.7M OHM 1/10W
R615	X-R801R7223J	RC	22K OHM 1/10W	R1001	X-R803R9103J	RC	10K OHM 1/16W
R617	X-R801R7222J	RC	2.2K OHM 1/10W	R1002	X-R803R9472J	RC	4.7K OHM 1/16W
R618	X-R801R7102J	RC	1K OHM 1/10W	R1003	X-R803R9472J	RC	4.7K OHM 1/16W
R619	X-R801R7332J	RC	3.3K OHM 1/10W	R1004	X-R803R9472J	RC	4.7K OHM 1/16W
R620	X-R801R7471J	RC	470 OHM 1/10W	R1005	X-R803R9472J	RC	4.7K OHM 1/16W
R622	X-R801R7102J	RC	1K OHM 1/10W	R1006	X-R803R9103J	RC	10K OHM 1/16W
R623	X-R801R7222J	RC	2.2K OHM 1/10W	R1007	X-R803R9102J	RC	1K OHM 1/16W
R624	X-R002T4271J	RC	270 OHM 1/4W	R1008	X-R803R9472J	RC	4.7K OHM 1/16W
R625	X-R801R7102J	RC	1K OHM 1/10W	R1009	X-R803R9472J	RC	4.7K OHM 1/16W
R627	X-R801R7823J	RC	82K OHM 1/10W	R1010	X-R803R9472J	RC	4.7K OHM 1/16W
R628	X-R801R7824J	RC	820K OHM 1/10W	R1011	X-R803R9472J	RC	4.7K OHM 1/16W
R629	X-R801R7101J	RC	100 OHM 1/10W	R1012	X-R803R9102J	RC	1K OHM 1/16W
R630	X-R002T4103J	RC	10K OHM 1/4W	R1014	X-R803R9472J	RC	4.7K OHM 1/16W
R631	X-R801R7101J	RC	100 OHM 1/10W	R1015	X-R803R9472J	RC	4.7K OHM 1/16W
R634	X-R801R7154J	RC	150K OHM 1/10W	R1016	X-R803R9472J	RC	4.7K OHM 1/16W
R637	X-R801R7103J	RC	10K OHM 1/10W	R1017	X-R803R9472J	RC	4.7K OHM 1/16W
R638	X-R801R7222J	RC	2.2K OHM 1/10W	R1018	X-R803R9472J	RC	4.7K OHM 1/16W
R639	X-R801R7333J	RC	33K OHM 1/10W	R1019	X-R803R9100J	RC	10 OHM 1/16W
R640	X-R801R7155J	RC	1.5M OHM 1/10W	R1023	X-R803R9102J	RC	1K OHM 1/16W
R641	X-R002T2331J	RC	330 OHM 1/2W	R1024	X-R803R9102J	RC	1K OHM 1/16W
R701	X-R002T4271J	RC	270 OHM 1/4W	R1027	X-R803R9102J	RC	1K OHM 1/16W
R703	X-R801R7471J	RC	470 OHM 1/10W	R1028	X-R803R9102J	RC	1K OHM 1/16W
R706	X-R801R7101J	RC	100 OHM 1/10W	R1033	X-R803R9100J	RC	10 OHM 1/16W
R707	X-R801R7101J	RC	100 OHM 1/10W	R1034	X-R803R9472J	RC	4.7K OHM 1/16W
R708	X-R002T4101J	RC	100 OHM 1/4W	R4001	X-R803R92R2J	RC	2.2 OHM 1/16W
R709	X-R002T4101J	RC	100 OHM 1/4W	R4002	X-R803R9472J	RC	4.7K OHM 1/16W
R710	X-R801R7101J	RC	100 OHM 1/10W	R4003	X-R803R9472J	RC	4.7K OHM 1/16W
R711	X-R801R7101J	RC	100 OHM 1/10W	R4004	X-R803R9472J	RC	4.7K OHM 1/16W
R712	X-R801R7101J	RC	100 OHM 1/10W	R4005	X-R803R9181J	RC	180 OHM 1/16W
R713	X-R801R7101J	RC	100 OHM 1/10W	R4006	X-R803R9101J	RC	100 OHM 1/16W
R716	X-R801R7101J	RC	100 OHM 1/10W	R4007	X-R803R9181J	RC	180 OHM 1/16W
R751	X-R002T4821J	RC	820 OHM 1/4W	R4008	X-R803R9181J	RC	180 OHM 1/16W
R751	X-R801R7101J	RC	100 OHM 1/10W	R4009	X-R803R9181J	RC	180 OHM 1/16W
R752	X-R002T4102J	RC	1K OHM 1/4W	R4010	X-R803R9101J	RC	100 OHM 1/16W
R752	X-R002T4101J	RC	100 OHM 1/4W	R4011	X-R803R9472J	RC	4.7K OHM 1/16W
R753	X-R002T4560J	RC	56 OHM 1/4W	R4012	X-R803R9472J	RC	4.7K OHM 1/16W
R753	X-R801R7682J	RC	6.8K OHM 1/10W	R4013	X-R803R9181J	RC	180 OHM 1/16W
R754	X-R002T4152J	RC	1.5K OHM 1/4W	R4014	X-R803R9181J	RC	180 OHM 1/16W
R754	X-R801R7181J	RC	180 OHM 1/10W	R4015	X-R803R9181J	RC	180 OHM 1/16W

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS				**RESISTORS**	
R4016	X-R803R9181J	RC	180 OHM 1/16W	R8016	X-R801R7102J	RC	1K OHM 1/10W
R4017	X-R803R9181J	RC	180 OHM 1/16W	R8017	X-R002T4750J	RC	75 OHM 1/4W
R4018	X-R803R9181J	RC	180 OHM 1/16W	R8501	X-R803R9393J	RC	39K OHM 1/16W
R4020	X-R803R9472J	RC	4.7K OHM 1/16W	R8502	X-R803R9103J	RC	10K OHM 1/16W
R4021	X-R803R9105J	RC	1M OHM 1/16W	R8503	X-R803R9103J	RC	10K OHM 1/16W
R4023	X-R803R9103J	RC	10K OHM 1/16W	R8504	X-R803R9750F	RC	75 OHM 1/16W
R4024	X-R803R9102J	RC	1K OHM 1/16W	R8505	X-R803R9750F	RC	75 OHM 1/16W
R4025	X-R803R9101J	RC	100 OHM 1/16W	R8507	X-R803R9750F	RC	75 OHM 1/16W
R4027	X-R803R9101J	RC	100 OHM 1/16W	R8508	X-R803R9750F	RC	75 OHM 1/16W
R4028	X-R803R9101J	RC	100 OHM 1/16W	R8509	X-R803R9103J	RC	10K OHM 1/16W
R4029	X-R803R9101J	RC	100 OHM 1/16W	R8510	X-R803R9103J	RC	10K OHM 1/16W
R7001	X-R801R7103J	RC	10K OHM 1/10W	R8513	X-R803R9102J	RC	1K OHM 1/16W
R7002	X-R801R7103J	RC	10K OHM 1/10W	R8514	X-R803R9102J	RC	1K OHM 1/16W
R7003	X-R801R7471J	RC	470 OHM 1/10W	R8517	X-R803R9102J	RC	1K OHM 1/16W
R7004	X-R801R7102J	RC	1K OHM 1/10W	R8518	X-R803R9102J	RC	1K OHM 1/16W
R7005	X-R801R7100J	RC	10 OHM 1/10W	R8520	X-R803R9102J	RC	1K OHM 1/16W
R7006	X-R801R7471J	RC	470 OHM 1/10W			**CAPACITORS**	
R7007	X-R801R7474J	RC	470K OHM 1/10W	C001	X-P6M9W0223J	CMPL	0.022 UF 50V TF
R7008	X-R801R7103J	RC	10K OHM 1/10W	C002	X-E02LU0471M	CE	470 UF 6.3V
R7009	X-R801R7100J	RC	10 OHM 1/10W	C003	X-CS0RCH412J	CC	100 PF 50V CH
R7010	X-R801R7100J	RC	10 OHM 1/10W	C004	X-CS0RCH412J	CC	100 PF 50V CH
R7011	X-R801R7104J	RC	100K OHM 1/10W	C005	X-E50HU53R3M	CE	3.3 UF 50V
R7012	X-R801R7104J	RC	100K OHM 1/10W	C006	X-E50HU0470M	CE	47 UF 6.3V
R7013	X-R801R7103J	RC	10K OHM 1/10W	C101	X-E50HU0330M	CE	33 UF 6.3V
R7014	X-R801R7103J	RC	10K OHM 1/10W	C102	X-CS0RB0414K	CC	0.01 UF 50V B
R7015	X-R801R7103J	RC	10K OHM 1/10W	C103	X-E50HU0221M	CE	220 UF 6.3V
R7016	X-R801R7121J	RC	120 OHM 1/10W	C104	X-CS0RB0315K	CC	0.1 UF 25V B
R7018	X-R801R7102J	RC	1K OHM 1/10W	C107	X-CS0RB0315K	CC	0.1 UF 25V B
R7019	X-R801R7102J	RC	1K OHM 1/10W	C108	X-CS0RB0315K	CC	0.1 UF 25V B
R7020	X-R801R7103J	RC	10K OHM 1/10W	C109	X-CS0RB04H4K	CC	0.022 UF 50V B
R7021	X-R801R7560J	RC	56 OHM 1/10W	C111	X-CS0RCH4K2J	CC	270 PF 50V CH
R7023	X-R801R7103J	RC	10K OHM 1/10W	C117	X-CS0RB0414K	CC	0.01 UF 50V B
R7024	X-R801R7103J	RC	10K OHM 1/10W	C119	X-E50HU0101M	CE	100 UF 6.3V
R7025	X-R801R7222J	RC	2.2K OHM 1/10W	C123	X-CS0RCH4W2J	CC	820 PF 50V CH
R7026	X-R801R7222J	RC	2.2K OHM 1/10W	C124	X-CS0RF0415Z	CC	0.1 UF 50V F
R7027	X-R801R7103J	RC	10K OHM 1/10W	C127	X-CS0RB04W3K	CC	0.0082UF 50V B
R7028	X-R801R7123J	RC	12K OHM 1/10W	C128	X-CS0RB0414K	CC	0.01 UF 50V B
R7029	X-R801R7123J	RC	12K OHM 1/10W	C129	X-CS0RF0415Z	CC	0.1 UF 50V F
R7030	X-R801R7102J	RC	1K OHM 1/10W	C130	X-CS0RF0415Z	CC	0.1 UF 50V F
R7031	X-R801R7822J	RC	8.2K OHM 1/10W	C131	X-CS0RF0415Z	CC	0.1 UF 50V F
R7032	X-R801R7822J	RC	8.2K OHM 1/10W	C151	X-E50HU0220M	CE	22 UF 6.3V
R7033	X-R801R7102J	RC	1K OHM 1/10W	C152	X-E02LU1471M	CE	470 UF 10V
R7034	X-R801R7471J	RC	470 OHM 1/10W	C153	X-E02LT0102M	CE	1000 UF 6.3V
R7035	X-R801R7471J	RC	470 OHM 1/10W	C154	X-E02LU1471M	CE	470 UF 10V
R7036	X-R801R7103J	RC	10K OHM 1/10W	C155	X-E02LT0102M	CE	1000 UF 6.3V
R7037	X-R801R7103J	RC	10K OHM 1/10W	C156	X-E50HU0221M	CE	220 UF 6.3V
R7038	X-R801R7332J	RC	3.3K OHM 1/10W	C157	X-E02LU1471M	CE	470 UF 10V
R7039	X-R801R7102J	RC	1K OHM 1/10W	C158	X-E50HU0470M	CE	47 UF 6.3V
R7040	X-R801R7102J	RC	1K OHM 1/10W	C159	X-E50HU0221M	CE	220 UF 6.3V
R7041	X-R002T4121J	RC	120 OHM 1/4W	C160	X-E02LT0102M	CE	1000 UF 6.3V
R7042	X-R801R7121J	RC	120 OHM 1/10W	C161	X-E02LT2102M	CE	1000 UF 16V
R7043	X-R801R7103J	RC	10K OHM 1/10W	C162	X-CS0RCH412J	CC	100 PF 50V CH
R7046	X-R801R7223J	RC	22K OHM 1/10W	C163	X-E02LT2471M	CE	470 UF 16V
R7047	X-R801R7101J	RC	100 OHM 1/10W	C164	X-E02LT0102M	CE	1000 UF 6.3V
R7048	X-R801R7123J	RC	12K OHM 1/10W	C165	X-E50HU54R7M	CE	4.7 UF 50V
R7049	X-R002T2331J	RC	330 OHM 1/2W	C167	X-E50HU0220M	CE	22 UF 6.3V
R7050	X-R002T4680J	RC	68 OHM 1/4W	C169	X-E50HU54R7M	CE	4.7 UF 50V
R7051	X-R002T4101J	RC	100 OHM 1/4W	C170	X-E02LT0102M	CE	1000 UF 6.3V
R7052	X-R002T4101J	RC	100 OHM 1/4W	C201	X-CS0RB0414K	CC	0.01 UF 50V B
R7053	X-R002T2221J	RC	220 OHM 1/2W	C202	X-CS0RB0314K	CC	0.01 UF 25V B
R7054	X-R801R7102J	RC	1K OHM 1/10W	C203	X-CS0RB04H3K	CC	0.0022UF 50V B
R7055	X-R002T4102J	RC	1K OHM 1/4W	C204	X-CS0RB0414K	CC	0.01 UF 50V B
R7056	X-R801R7124J	RC	120K OHM 1/10W	C205	X-E02LU1101M	CE	100 UF 10V
R7057	X-R801R7184J	RC	180K OHM 1/10W	C206	X-CS0RB0413K	CC	0.001 UF 50V B
R7058	X-R801R7124J	RC	120K OHM 1/10W	C207	X-E50HU2100M	CE	10 UF 16V
R7059	X-R801R7184J	RC	180K OHM 1/10W	C208	X-CS0RB0414K	CC	0.01 UF 50V B
R7060	X-R801R7222J	RC	2.2K OHM 1/10W	C209	X-E50HU5R22M	CE	0.22 UF 50 V
R7061	X-R002T4750J	RC	75 OHM 1/4W	C210	X-E02LU2101M	CE	100 UF 16V
R7062	X-R801R7222J	RC	2.2K OHM 1/10W	C213	X-E50HU2100M	CE	10 UF 16V
R8008	X-R002T2221J	RC	220 OHM 1/2W	C214	X-CS0RB0315K	CC	0.1 UF 25V B
R8009	X-R801R7222J	RC	2.2K OHM 1/10W	C215	X-CS0RCH4L1J	CC	33 PF 50V CH
R8010	X-R801R7222J	RC	2.2K OHM 1/10W	C218	X-CS0RB0414K	CC	0.01 UF 50V B
R8011	X-R801R7124J	RC	120K OHM 1/10W	C219	X-E50HU2100M	CE	10 UF 16V
R8012	X-R801R7184J	RC	180K OHM 1/10W	C220	X-CS0RB0414K	CC	0.01 UF 50V B
R8013	X-R801R7124J	RC	120K OHM 1/10W	C221	X-E50HU5R47M	CE	0.47 UF 50V
R8014	X-R801R7184J	RC	180K OHM 1/10W	C222	X-CS0RB0414K	CC	0.01 UF 50V B
R8015	X-R801R7102J	RC	1K OHM 1/10W	C226	X-CS0RB0315K	CC	0.1 UF 25V B

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		REF. NO.	PART NO.	DESCRIPTION	
		CAPACITORS				**CAPACITORS**	
C227	X-E02LU2470M	CE	47 UF 16V	C510	X-E5EZT5470M	CE	47 UF 50V
C301	X-E02LU2101M	CE	100 UF 16V	C512	X-C0JTB05H2K	CC	220 PF 500V B
C302	X-E50HU52R2M	CE	2.2 UF 50V	C514	X-C0JLYR7E3K	CC	0.0015UF 2KV YR
C303	X-E02LU2470M	CE	47 UF 16V	C515	X-C0JTB04K2K	CC	270 PF 50V B
C304	X-CS0RB0315K	CC	0.1 UF 25V B	C516	X-C0JTB05Q2K	CC	470 PF 500V B
C305	X-E02LU2101M	CE	100 UF 16V	C517	X-C0JLYR7E3K	CC	0.0015UF 2KV YR
C307	X-CS0RB0414K	CC	0.01 UF 50V B	C518	X-C0JLYR7U2K	CC	680 PF 2KV YR
C308	X-E02LU5100M	CE	10 UF 50V	C519	X-C0JTB05Q2K	CC	470 PF 500V B
C309	X-E50HU52R2M	CE	2.2 UF 50V	⚠ C520	X-E02L02222M	CE	2200 UF 16V
C311	X-CS0RB04L4K	CC	0.033 UF 50V B	⚠ C521	X-E62NFC221M	CE	220 UF 200V
C312	X-E02LU3330M	CE	33 UF 25V	⚠ C523	X-E02LF3222M	CE	2200 UF 25V
C313	X-E02L03102M	CE	1000 UF 25V	⚠ C524	X-E02LU2470M	CE	47 UF 16V
C314	X-CS0RB04L4K	CC	0.033 UF 50V B	C525	X-P1S3T0223J	CP	0.022 UF 50V
C315	X-CS0RB04H4K	CC	0.022 UF 50V B	C526	X-E50HU2100M	CE	10 UF 16V
C316	X-CS0RB04H4K	CC	0.022 UF 50V B	C527	X-C0JTB05Q2K	CC	470 PF 500V B
C317	X-CS0RB02Q5K	CC	0.47 UF 16V B	C528	X-E02LT2102M	CE	1000 UF 16V
C318	X-CS0RB02Q5K	CC	0.47 UF 16V B	⚠ C529	X-C034F0JL3M	CC	0.0033UF 125V MX
C319	X-E50HU52R2M	CE	2.2 UF 50V	⚠ C531	X-E62FT2471M	CE	470 UF 16V
C320	X-P232T0104J	CMPL	0.1 UF 50V MMTV	C534	X-E02LT0102M	CE	1000 UF 6.3V
C321	X-CS0RCH412J	CC	100 PF 50V CH	⚠ C535	X-E62DFB470M	CE	47 UF 160V
C322	X-CS0RB0413K	CC	0.001 UF 50V B	C537	X-E02LU5010M	CE	1 UF 50V
C323	X-CS0RB0315K	CC	0.1 UF 25V B	⚠ C538	X-E5EZTB4R7M	CE	4.7 UF 160V
C324	X-CS0RCH412J	CC	100 PF 50V CH	C554	X-P1S3T0222J	CP	0.0022UF 50V
C325	X-E02LU2470M	CE	47 UF 16V	C603	X-CS0RB03H5K	CC	0.22 UF 25V B
C326	X-CS0RB04H4K	CC	0.022 UF 50V B	C604	X-CS0RF0415Z	CC	0.1 UF 50V F
C327	X-E50HU52R2M	CE	2.2 UF 50V	C605	X-CS0RCH411D	CC	10 PF 50V CH
C328	X-E50HU54R7M	CE	4.7 UF 50V	C606	X-CS0RB04H3K	CC	0.0022UF 50V B
C337	X-CS0RB0216K	CC	1 UF 16V B	C607	X-E50HU5010M	CE	1 UF 50V
C340	X-CS0RB0216K	CC	1 UF 16V B	C608	X-E50HU5010M	CE	1 UF 50V
C346	X-E50HU52R2M	CE	2.2 UF 50V	C609	X-E50HU5R22M	CE	0.22 UF 50 V
C347	X-E50HU52R2M	CE	2.2 UF 50V	C610	X-CS0RB04H4K	CC	0.022 UF 50V B
C348	X-CS0RB0414K	CC	0.01 UF 50V B	C611	X-CS0RB0413K	CC	0.001 UF 50V B
C349	X-CS0RB04Q2K	CC	470 PF 50V B	C612	X-CS0RB0414K	CC	0.01 UF 50V B
C350	X-CS0RB04Q2K	CC	470 PF 50V B	C613	X-CS0RF0415Z	CC	0.1 UF 50V F
C351	X-CS0RB04Q2K	CC	470 PF 50V B	C614	X-E02LU0471M	CE	470 UF 6.3V
C352	X-CS0RB04Q2K	CC	470 PF 50V B	C616	X-CS0RF0415Z	CC	0.1 UF 50V F
C353	X-CS0RB04Q2K	CC	470 PF 50V B	C617	X-CS0RB0315K	CC	0.1 UF 25V B
C354	X-CS0RB04H3K	CC	0.0022UF 50V B	C618	X-E50HU5010M	CE	1 UF 50V
C355	X-CS0RB04H3K	CC	0.0022UF 50V B	C619	X-CS0RB0315K	CC	0.1 UF 25V B
C401	X-E5EZT8100M	CE	10 UF 100V	C620	X-E02LU1101M	CE	100 UF 10V
C402	X-C0JTB0413K	CC	0.001 UF 50V B	C621	X-E50HU5R47M	CE	0.47 UF 50V
C403	X-E02LU5100M	CE	10 UF 50V	C622	X-CS0RB0315K	CC	0.1 UF 25V B
C404	X-E5EZT54R7M	CE	4.7 UF 50V	C624	X-CS0RB0315K	CC	0.1 UF 25V B
C405	X-E5EZT53R3M	CE	3.3 UF 50V	C625	X-E50HU52R2M	CE	2.2 UF 50V
C406	X-E5EZT4101M	CE	100 UF 35V	C626	X-CS0RB0315K	CC	0.1 UF 25V B
⚠ C407	X-E5EZF3222M	CE	2200 UF 25V	C628	X-CS0RB04W3K	CC	0.0082UF 50V B
C409	X-P1S3T0222J	CP	0.0022UF 50V	C629	X-CS0RB0414K	CC	0.01 UF 50V B
C412	X-C0JTSL5S1K	CC	56 PF 500V SL	C630	X-E50HU1101M	CE	100 UF 10 V
C413	X-C0JTB0513K	CC	0.001 UF 500V B	C631	X-CS0RB0315K	CC	0.1 UF 25V B
C414	X-E5EZT2471M	CE	470 UF 16V	C632	X-CS0RCH412J	CC	100 PF 50V CH
C416	X-C0JTSL5H1J	CC	22 PF 500V SL	C634	X-E02LU2470M	CE	47 UF 16V
C417	X-C0JTB05H3K	CC	0.0022UF 500V B	C635	X-CS0RB0315K	CC	0.1 UF 25V B
C418	X-E5EZTB010M	CE	1 UF 160V	C636	X-CS0RB0414K	CC	0.01 UF 50V B
C419	X-E5EZT2471M	CE	470 UF 16V	C639	X-E00NU54R7M	CE	4.7 UF 50 V
⚠ C421	X-E5EZ04102M	CE	1000 UF 35V	C641	X-E50HU52R2M	CE	2.2 UF 50V
C422	X-E5EZTD010M	CE	1 UF 250V	C642	X-CS0RF0415Z	CC	0.1 UF 50V F
C423	X-P4J7F3474J	CMPP	0.47 UF 250V PMS	C701	X-E50HU2220M	CE	22 UF 16 V
⚠ C424	X-C0JLYR7U2K	CC	680 PF 2KV YR	C703	X-CS0RB0315K	CC	0.1 UF 25V B
⚠ C426	X-P4N8FJ472H	CMPP	0.0047UF 1.25KV	C704	X-E50HU52R2M	CE	2.2 UF 50V
⚠ C427	X-P4N8FJ822H	CMPP	0.0082UF 1.25KV	C705	X-E50HU52R2M	CE	2.2 UF 50V
⚠ C428	X-P3N1F5473J	CPP	0.047 UF 630V	C706	X-E50HU2101M	CE	100 UF 16 V
C429	X-C0JTB05Q2K	CC	470 PF 500V B	C707	X-CS0RB0414K	CC	0.01 UF 50V B
C430	X-C0JTB05Q2K	CC	470 PF 500V B	C714	X-CS0RB0315K	CC	0.1 UF 25V B
⚠ C431	X-E5EZTD100M	CE	10 UF 250V	C715	X-E50HU52R2M	CE	2.2 UF 50V
C432	X-P235W1104J	CMP	0.1 UF 100V MKT	C716	X-E50HU52R2M	CE	2.2 UF 50V
⚠ C433	X-E5EZT8220M	CE	22 UF 100V	C717	X-E50HU52R2M	CE	2.2 UF 50V
C442	X-E53FF56R8K	CE	6.8 UF 50V NP	C718	X-E50HU52R2M	CE	2.2 UF 50V
C450	X-C0JLYR713K	CC	0.001 UF 2KV YR	C719	X-CS0RB0315K	CC	0.1 UF 25V B
C501	X-C0JTB05Q2K	CC	470 PF 500V B	C728	X-CS0RB0315K	CC	0.1 UF 25V B
⚠ C502	X-C13HB07H3K	CC	0.0022UF 2KV B	C729	X-E50HU52R2M	CE	2.2 UF 50V
⚠ C503	X-C13HB07H3K	CC	0.0022UF 2KV B	C730	X-E50HU52R2M	CE	2.2 UF 50V
⚠ C504	X-E02LT1102M	CE	1000 UF 10V	C751	X-E50HU2470M	CE	47 UF 16V
⚠ C505	X-P2472B224M	CMP	0.22UF 275V PHE840	C751	X-E50HU0221M	CE	220 UF 6.3V
⚠ C506	X-P2472B224M	CMP	0.22UF 275V PHE840	C752	X-CS0RB0414K	CC	0.01 UF 50V B
⚠ C507	X-E51SFC821M	CE	820 UF 200V	C755	X-CS0RB0414K	CC	0.01 UF 50V B
⚠ C508	X-C034E0JH3M	CC	0.0022UF 125V MX	C756	X-CS0RCH4S1J	CC	56 PF 50V CH
C509	X-P1S3T0273J	CP	0.027 UF 50V	C758	X-CS0RCH4K1J	CC	27 PF 50V CH

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
		CAPACITORS			CAPACITORS
C759	X-CS0RB0414K	CC 0.01 UF 50V B	C7002	X-CS0RB04Q2K	CC 470 PF 50V B
C760	X-CS0RB0414K	CC 0.01 UF 50V B	C7003	X-E02L02471M	CE 470 UF 16V
C762	X-CS0RCH4Q1J	CC 47 PF 50V CH	C7004	X-E50HU0470M	CE 47 UF 6.3V
C763	X-CS0RB0414K	CC 0.01 UF 50V B	C7005	X-CS0RB04H4K	CC 0.022 UF 50V B
C764	X-CS0RB0414K	CC 0.01 UF 50V B	C7006	X-E50HU52R2M	CE 2.2 UF 50V
C765	X-E50HU5R47M	CE 0.47 UF 50V	C7007	X-E50HU52R2M	CE 2.2 UF 50V
C766	X-CS0RCH4H1J	CC 22 PF 50V CH	C7008	X-E50HU54R7M	CE 4.7 UF 50V
C768	X-CS0RB0414K	CC 0.01 UF 50V B	C7009	X-CS0RCH412J	CC 100 PF 50V CH
C769	X-CS0RB0414K	CC 0.01 UF 50V B	C7010	X-CS0RCH4W2J	CC 820 PF 50V CH
C770	X-CS0RB0315K	CC 0.1 UF 25V B	C7011	X-E50HU54R7M	CE 4.7 UF 50V
C771	X-CS0RCH4S1J	CC 56 PF 50V CH	C7012	X-CS0RCH4W2J	CC 820 PF 50V CH
C773	X-CS0RCH4G2J	CC 180 PF 50V CH	C7013	X-E50HU2100M	CE 10 UF 16V
C774	X-CS0RCH412J	CC 100 PF 50V CH	C7014	X-E50HU1330M	CE 33 UF 10 V
C775	X-E50HU0221M	CE 220 UF 6.3V	C7015	X-CS0RB0315K	CC 0.1 UF 25V B
C779	X-CS0RB0315K	CC 0.1 UF 25V B	C7016	X-CS0RB0315K	CC 0.1 UF 25V B
C783	X-E50HU52R2M	CE 2.2 UF 50V	C7017	X-E02L02471M	CE 470 UF 16V
C785	X-E02LU0221M	CE 220 UF 6.3V	C7019	X-E50HU54R7M	CE 4.7 UF 50V
C786	X-CS0RB0414K	CC 0.01 UF 50V B	C7020	X-CS0RCH4E3J	CC 0.0015UF 50V CH
C790	X-CS0RB0315K	CC 0.1 UF 25V B	C7022	X-CS0RCH4E3J	CC 0.0015UF 50V CH
C793	X-CS0RB0315K	CC 0.1 UF 25V B	C7024	X-CS0RCH412J	CC 100 PF 50V CH
C803	X-E02LTD010M	CE 1 UF 250V	C7025	X-CS0RCH412J	CC 100 PF 50V CH
C809	X-CHGTB04N2K	CC 390 PF 50V B	C7026	X-CS0RCH412J	CC 100 PF 50V CH
C810	X-CHGTB04K2K	CC 270 PF 50V B	C7029	X-E50HU52R2M	CE 2.2 UF 50V
C811	X-CHGTB04K2K	CC 270 PF 50V B	C7030	X-E50HU52R2M	CE 2.2 UF 50V
C819	X-C0HHB07H3K	CC 0.0022UF 2KV B	C7031	X-E50HU2220M	CE 22 UF 16 V
C907	X-E50HU54R7M	CE 4.7 UF 50V	C7032	X-E50HU2220M	CE 22 UF 16 V
C920	X-CS0RB0315K	CC 0.1 UF 25V B	C7033	X-CS0RCH4H2J	CC 220 PF 50V CH
C921	X-E50HU54R7M	CE 4.7 UF 50V	C7034	X-E50HU54R7M	CE 4.7 UF 50V
C922	X-CS0RB0315K	CC 0.1 UF 25V B	C7037	X-CS0RB04Q2K	CC 470 PF 50V B
C923	X-CS0RB0315K	CC 0.1 UF 25V B	C7038	X-CS0RF0415Z	CC 0.1 UF 50V F
C924	X-CS0RB0315K	CC 0.1 UF 25V B	C7039	X-CS0RB04Q2K	CC 470 PF 50V B
C925	X-E50HU54R7M	CE 4.7 UF 50V	C7040	X-E02LT0102M	CE 1000 UF 6.3V
C926	X-E50HU54R7M	CE 4.7 UF 50V	C7041	X-E02LU2101M	CE 100 UF 16V
C928	X-E02LU5100M	CE 10 UF 50V	C7042	X-E50HU2100M	CE 10 UF 16V
C929	X-CS0RB0315K	CC 0.1 UF 25V B	C7043	X-E50HU2100M	CE 10 UF 16V
C931	X-E02LU1101M	CE 100 UF 10V	C7044	X-E02LU5100M	CE 10 UF 50V
C932	X-E50HU5R33M	CE 0.33 UF 50 V	C7045	X-CS0RB04H3K	CC 0.0022UF 50V B
C933	X-CS0RB04Q4K	CC 0.047 UF 50V B	C7046	X-E02LU5100M	CE 10 UF 50V
C934	X-CS0RB04H4K	CC 0.022 UF 50V B	C7047	X-CS0RB04H3K	CC 0.0022UF 50V B
C935	X-CS0RB0315K	CC 0.1 UF 25V B	C7048	X-E02LU2470M	CE 47 UF 16V
C936	X-E02LU53R3M	CE 3.3 UF 50V	C7049	X-CS0RCH412J	CC 100 PF 50V CH
C937	X-CS0RB0315K	CC 0.1 UF 25V B	C7050	X-E50HU2100M	CE 10 UF 16V
C938	X-CS0RB0315K	CC 0.1 UF 25V B	C7051	X-E50HU2100M	CE 10 UF 16V
C939	X-CS0RB0315K	CC 0.1 UF 25V B	C7052	X-E50HU2100M	CE 10 UF 16V
C1001	X-CS0PF0315Z	CC 0.1 UF 25V F	C7053	X-E02LU2101M	CE 100 UF 16V
C1002	X-CS0PCH4G1J	CC 18 PF 50V CH	C8006	X-E02LU2470M	CE 47 UF 16V
C1003	X-CS0PCH4G1J	CC 18 PF 50V CH	C8007	X-E02LU5100M	CE 10 UF 50V
C1004	X-E50HU0221M	CE 220 UF 6.3V	C8008	X-E02LU5100M	CE 10 UF 50V
C1005	X-CS0PF0315Z	CC 0.1 UF 25V F	C8009	X-CS0RB04H4K	CC 0.022 UF 50V B
C1006	X-CS0PF0315Z	CC 0.1 UF 25V F	C8010	X-CS0RB04H4K	CC 0.022 UF 50V B
C1007	X-E50HU0221M	CE 220 UF 6.3V	C8501	X-CS0PF0315Z	CC 0.1 UF 25V F
C1008	X-CS0PF0315Z	CC 0.1 UF 25V F	C8502	X-CS0PF0315Z	CC 0.1 UF 25V F
C1009	X-CS0PF0315Z	CC 0.1 UF 25V F	C8503	X-E50HU0220M	CE 22 UF 6.3V
C1010	X-CS0PF0315Z	CC 0.1 UF 25V F	C8504	X-CS0PF0315Z	CC 0.1 UF 25V F
C1011	X-CS0PF0315Z	CC 0.1 UF 25V F	C8505	X-E50HU0220M	CE 22 UF 6.3V
C1014	X-CS0PF0315Z	CC 0.1 UF 25V F	C8506	X-CS0PF0315Z	CC 0.1 UF 25V F
C4001	X-CS0PF0315Z	CC 0.1 UF 25V F	C8507	X-CS0PF0315Z	CC 0.1 UF 25V F
C4002	X-CS0PF0315Z	CC 0.1 UF 25V F	C8508	X-CS0PF0315Z	CC 0.1 UF 25V F
C4003	X-CS0PF0315Z	CC 0.1 UF 25V F	C8509	X-E50HU0221M	CE 220 UF 6.3V
C4004	X-CS0PF0315Z	CC 0.1 UF 25V F	C8510	X-CS0PF0315Z	CC 0.1 UF 25V F
C4005	X-CS0PF0315Z	CC 0.1 UF 25V F	C8511	X-CS0PF0315Z	CC 0.1 UF 25V F
C4006	X-CS0PF0315Z	CC 0.1 UF 25V F	C8512	X-CS0PF0315Z	CC 0.1 UF 25V F
C4007	X-CS0PB0413K	CC 0.001 UF 50V B	C8514	X-E50HU0221M	CE 220 UF 6.3V
C4008	X-E50HU0221M	CE 220 UF 6.3V	C8515	X-CS0PF0315Z	CC 0.1 UF 25V F
C4009	X-CS0PB02Q4K	CC 0.047 UF 16V B	C8517	X-CS0PCH4H1J	CC 22 PF 50V CH
C4010	X-CS0PF0315Z	CC 0.1 UF 25V F	C8519	X-CS0PCH4K2J	CC 270 PF 50V CH
C4011	X-CS0PF0315Z	CC 0.1 UF 25V F	C8521	X-CS0PCH4L2J	CC 330 PF 50V CH
C4014	X-CS0PF0315Z	CC 0.1 UF 25V F	C8523	X-E50HU0470M	CE 47 UF 6.3V
C4015	X-CS0PF0315Z	CC 0.1 UF 25V F	C8524	X-CS0PF0315Z	CC 0.1 UF 25V F
C4016	X-CS0PF0315Z	CC 0.1 UF 25V F	C8525	X-CS0PCH4H1J	CC 22 PF 50V CH
C4017	X-E50HU0221M	CE 220 UF 6.3V	C8526	X-CS0PCH4H1J	CC 22 PF 50V CH
C4018	X-CS0PF0315Z	CC 0.1 UF 25V F	C8527	X-CS0PCH4K2J	CC 270 PF 50V CH
C4019	X-CS0PF0315Z	CC 0.1 UF 25V F	C8528	X-CS0PCH4E2J	CC 150 PF 50V CH
C4020	X-E50HU0470M	CE 47 UF 6.3V	C8529	X-CS0PCH4L2J	CC 330 PF 50V CH
C4024	X-E50HU0470M	CE 47 UF 6.3V	C8530	X-CS0PCH4H2J	CC 220 PF 50V CH
C4025	X-CS0PF0315Z	CC 0.1 UF 25V F	C8532	X-E50HU0470M	CE 47 UF 6.3V
C7001	X-CS0RB04Q2K	CC 470 PF 50V B	C8533	X-E50HU0220M	CE 22 UF 6.3V

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		CAPACITORS	
C8534	X-E50HU0470M	CE	47 UF 6.3V
C8535	X-CS0PF0315Z	CC	0.1 UF 25V F
C8536	X-E50HU0220M	CE	22 UF 6.3V
C8537	X-E50HU0220M	CE	22 UF 6.3V
C8538	X-CS0PF0315Z	CC	0.1 UF 25V F
C8539	X-E50HU0220M	CE	22 UF 6.3V
		.....	
D101	X-D1VT001330	DIODE,SILICON	1SS133T-77
D104	X-D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
D150	X-D1VT001330	DIODE,SILICON	1SS133T-77
D151	X-D1VT001330	DIODE,SILICON	1SS133T-77
D152	X-D1VT001330	DIODE,SILICON	1SS133T-77
D155	X-D1VT001330	DIODE,SILICON	1SS133T-77
D159	X-D23TSB0400	DIODE,SILICON	SB040-G3
D202	X-D1VT001330	DIODE,SILICON	1SS133T-77
D401	X-D28T11E1N1	DIODE,SILICON	11E1N-TA1B2
D402	X-D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
D405	X-D28X10ELS6	DIODE,RECTIFIER	10ELS6-TA2B5
⚠ D407	X-DCBFMV3FU0	DIODE	FMV-3FULF027-102
⚠ D408	X-D97U02701B	DIODE,ZENER	MTZJ27B T-77
⚠ D409	X-D97U01101B	DIODE,ZENER	MTZJ11B T-77
D410	X-D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
⚠ D411	X-D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
⚠ D412	X-D2WTAU02A0	DIODE,SILICON	AU02A-EIC
⚠ D413	X-D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
⚠ D501	X-D4LZBL06L0	DIODE	GBL06L-6177
⚠ D503	X-D2WXRU2AM0	DIODE,SILICON	RU2AM-EIC
⚠ D504	X-D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
⚠ D505	X-D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
D506	X-D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
D507	X-D2WXSB1400	DIODE SCHOTTKY	SB140-EIC
⚠ D508	X-D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
⚠ D509	X-D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
⚠ D510	X-D2WXRU2AM0	DIODE,SILICON	RU2AM-EIC
⚠ D511	X-D28TELS2N2	DIODE RECTIFER	10ELS2N-TA1B2
⚠ D512	X-D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
D514	X-D23TSB0400	DIODE,SILICON	SB040-G3
D515	X-D97U03001B	DIODE,ZENER	MTZJ30B T-77
D516	X-D1VT001330	DIODE,SILICON	1SS133T-77
D517	X-D1VT001330	DIODE,SILICON	1SS133T-77
D518	X-D1VT001330	DIODE,SILICON	1SS133T-77
⚠ D519	X-D28TELS2N2	DIODE RECTIFER	10ELS2N-TA1B2
D521	X-D1VT001330	DIODE,SILICON	1SS133T-77
D527	X-D1VT001330	DIODE,SILICON	1SS133T-77
D528	X-D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
⚠ D533	X-D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
D534	X-D97U01001B	DIODE,ZENER	MTZJ10B T-77
⚠ D536	X-D2WXN40050	DIODE,SILICON	1N4005-EIC
D603	X-D1VT001330	DIODE,SILICON	1SS133T-77
D604	X-D1VT001330	DIODE,SILICON	1SS133T-77
D605	X-D1VT001330	DIODE,SILICON	1SS133T-77
D606	X-D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D607	X-D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D608	X-D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D612	X-D2WT11ES10	DIODE,SILICON	11ES1-EIC
D613	X-D1VT001330	DIODE,SILICON	1SS133T-77
D614	X-D1VT001330	DIODE,SILICON	1SS133T-77
D615	X-D1VT001330	DIODE,SILICON	1SS133T-77
D751	X-0021721150	LED	SLR-342VCT32
D805	X-D1VT001330	DIODE,SILICON	1SS133T-77
D806	X-D1VT001330	DIODE,SILICON	1SS133T-77
D807	X-D1VT001330	DIODE,SILICON	1SS133T-77
D1002	X-DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D1003	X-DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D1004	X-DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D7005	X-D1VT001330	DIODE,SILICON	1SS133T-77
D7006	X-D1VT001330	DIODE,SILICON	1SS133T-77
D7010	X-D1VT001330	DIODE,SILICON	1SS133T-77
D7011	X-D1VT001330	DIODE,SILICON	1SS133T-77
D7013	X-D1VT001330	DIODE,SILICON	1SS133T-77
D8501	X-DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D8502	X-DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D8505	X-DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D8506	X-DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D8507	X-DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D8508	X-DD7R0S3550	DIODE,SILICON	1SS355 TE-17

REF. NO.	PART NO.	DESCRIPTION	
		ICS	
IC101	X-I55D06063A	IC	OEC6063A
IC102	X-I9UJ0T600C	IC	PST600C
⚠ IC152	X-I1KA97805A	IC	KIA7805API
⚠ IC153	X-I1KA97809A	IC	KIA7809API
⚠ IC154	X-I1KA97805A	IC	KIA7805API
IC199	X-A58702B255	IC	S-24C08ADPA-01
IC301	X-I06F062420	IC	M62420FP
⚠ IC302	X-I0FSP75220	IC	AN7522
⚠ IC401	X-I01TD55220	IC	AN5522
⚠ IC501	X-I2BT06624G	IC	STR-G6624
⚠ IC503	X-I1KA97805A	IC	KIA7805API
IC601	X-I05DC12530	IC	TB1253N
IC602	X-I03E071510	IC	LA7151M-TP-T1
IC701	X-I0UD013110	IC	MM1311AD
IC751	X-I05DE90A45	IC	TC90A45P
IC902	X-I01FF58290	IC	AN5829S
IC1001	X-ICQF067030	IC	ZR36703
IC1006	X-I57F04C01W	IC	BR24C01AF-WE2
IC4001	X-ICQF067100	IC	MD36710X
IC4002	X-ICLJ0610DB	IC	HY57V161610DTC-8
IC4004	X-I5CF040520	IC	SN74LV4052APW
IC7001	X-I0QF045800	IC	NJM4580M
IC7002	X-I5CF040530	IC	CD4053BNSR
IC8501	X-I5VF0865A0	IC	BT865AKRF
IC8503	X-I17F017160	IC	PCM1716E
IC8504	X-I5CF040520	IC	SN74LV4052APW
		.....	
Q103	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q105	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q109	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
⚠ Q150	X-TD3T012460	TRANSISTOR,SILICON	2SD1246(S,T)-AA
Q151	X-TB3T011310	TRANSISTOR,SILICON	2SB1131(S,T)-AE
Q152	X-TNAAJ05003	COMPOUND TRANSISTOR	KRC111RTK
Q153	X-TB3T011310	TRANSISTOR,SILICON	2SB1131(S,T)-AE
⚠ Q154	X-TB30011430	TRANSISTOR,SILICON	2SB1143(S,T,U)
Q155	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q156	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q157	X-TB3T011310	TRANSISTOR,SILICON	2SB1131(S,T)-AE
Q158	X-TAAT012714	TRANSISTOR,SILICON	KTA1271_Y-AT
Q159	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q160	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q202	X-T87A02412K	TRANSISTOR,SILICON	2SC2412KT147(R,S)
Q203	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q204	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q205	X-T83A028140	TRANSISTOR,SILICON	2SC2814(F3,F4)-T
Q301	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q303	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q304	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
⚠ Q401	X-TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
Q402	X-TNATJ03003	COMPOUND TRANSISTOR	KRC111MAT
Q403	X-TNATJ03003	COMPOUND TRANSISTOR	KRC111MAT
Q404	X-TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
⚠ Q405	X-TC3Q026210	TRANSISTOR,SILICON	2SC2621(D,E)-RAC
⚠ Q406	X-TDUU024990	TRANSISTOR,SILICON	2SD2499(LBOEC1)
Q407	X-TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q408	X-TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q409	X-TD30016670	TRANSISTOR,SILICON	2SD1667(R,S)
Q410	X-TNATJ03003	COMPOUND TRANSISTOR	KRC111MAT
Q501	X-TAAT012714	TRANSISTOR,SILICON	KTA1271_Y-AT
Q502	X-TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠ Q503	X-TCWQ4160E0	TRANSISTOR,SILICON	2SC4160-OEC-YAC1
Q504	X-TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠ Q505	X-0002E00610	PHOTO COUPLER	LTV-817M-VB
Q507	X-TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q508	X-TD3T012460	TRANSISTOR,SILICON	2SD1246(S,T)-AA
⚠ Q509	X-TA5T010130	TRANSISTOR,SILICON	2SA1013 (TPE6)
⚠ Q510	X-TC3T029090	TRANSISTOR,SILICON	2SC2909(S,T)-AA
⚠ Q511	X-TB30011430	TRANSISTOR,SILICON	2SB1143(S,T,U)
Q603	X-T87A02412K	TRANSISTOR,SILICON	2SC2412KT147(R,S)
Q604	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q608	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q702	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q751	X-TNATX05001	COMPOUND TRANSISTOR	KRC114MAT
Q751	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q752	X-T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q753	X-T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q754	X-T87A02412K	TRANSISTOR,SILICON	2SC2412KT147(R,S)

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		TRANSISTORS	
⚠ Q804	X-TC3Q026210	TRANSISTOR,SILICON	2SC2621(D,E)-RAC
⚠ Q805	X-TC3Q026210	TRANSISTOR,SILICON	2SC2621(D,E)-RAC
⚠ Q806	X-TC3Q026210	TRANSISTOR,SILICON	2SC2621(D,E)-RAC
⚠ Q807	X-TCYT1740S0	TRANSISTOR,SILICON	2SC1740SP TP
⚠ Q808	X-TCYT1740S0	TRANSISTOR,SILICON	2SC1740SP TP
⚠ Q809	X-TCYT1740S0	TRANSISTOR,SILICON	2SC1740SP TP
Q7001	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7002	X-T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q7003	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7004	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7005	X-TPYJB05001	COMPOUND TRANSISTOR	DTA114EKAT146
Q7006	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7007	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7008	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7009	X-TNAAC05002	COMPOUND TRANSISTOR	KRC103RTK
Q7010	X-TPYJA05001	COMPOUND TRANSISTOR	DTA143EKAT146
Q7011	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7012	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7013	X-TNAAC05002	COMPOUND TRANSISTOR	KRC103RTK
Q7014	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7015	X-TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q7016	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7017	X-TNYJD05001	COMPOUND TRANSISTOR	DTC144EKAT146
Q8002	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8003	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8501	X-T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
		COILS &TRANSFORMERS	
L001	X-02167F101J	COIL	100 UH
L201	X-021LA6180K	COIL	18 UH
L202	X-02167F101J	COIL	100 UH
L203	X-02167F101J	COIL	100 UH
L204	X-021LA6R22M	COIL	0.22 UH
L207	X-021LA6R56M	COIL	0.56 UH
L302	X-02167F101J	COIL	100 UH
L303	X-02167F101J	COIL	100 UH
L401	X-021679472K	COIL	4.7 MH
L402	X-022100027A	COIL,LINEARITY	ELH5L4113
L403	X-02D1000001	COIL	ELC16B501EN
⚠ L501	X-029X000098	COIL,LINE FILTER	SS28H-20075
L502	X-02AHB9A972	CORE,FERRITE	W5T29X7.5X19
⚠ L503	X-028R200024	COIL,DEGAUSS	8R200024
L601	X-02167F101J	COIL	100 UH
L602	X-02167F101J	COIL	100 UH
L603	X-02167F101J	COIL	100 UH
L701	X-02167F101J	COIL	100 UH
L751	X-02167F101J	COIL	100 UH
L752	X-021LA6150K	COIL	15 UH
L753	X-021LA6150K	COIL	15 UH
L755	X-02167F101J	COIL	100 UH
L758	X-02167F101J	COIL	100 UH
L801	X-02AHB9A972	CORE,FERRITE	W5T29X7.5X19
L802	X-02167D151K	COIL	150 UH
L802	X-02AHB9A972	CORE,FERRITE	W5T29X7.5X19
L803	X-02167D151K	COIL	150 UH
L803	X-02AHB9A972	CORE,FERRITE	W5T29X7.5X´ or
	X-02AXB9A971	CORE,FERRITE	ESD-R-30SD or
	X-02A1281872	CORE,TRIDAL	KR16TT281807D
L804	X-02167D151K	COIL	150 UH
L810	X-02AHB9A972	CORE,FERRITE	W5T29X7.5X19
L811	X-02AHB9A972	CORE,FERRITE	W5T29X7.5X19
L902	X-02167F101J	COIL	100 UH
L7001	X-02167D472K	COIL	4.7 MH
L7002	X-021LA6101K	COIL	100 UH
L7003	X-02167F101J	COIL	100 UH
L7004	X-02167F101J	COIL	100 UH
L8501	X-02167B1R8K	COIL	1.8 UH
L8503	X-02167B1R8K	COIL	1.8 UH
L8504	X-02167B1R8K	COIL	1.8 UH
T401	X-045013001J	TRANS,HORIZONTAL DRI	5013001
⚠ T501	X-0481420624	TRANSFORMER,SWITCHI	81420624
		JACKS	
⚠ J301	X-0602131011	HEADPHONE JACK	HSJ2000-01-010
⚠ J801	X-066C130017	SOCKET,CATHODE RAY T	CVT3275-5101
J7001	X-060Q401038	RCA JACK	YKC21-3895
J7002	X-060Q411015	RCA JACK	AV3-19D-1
J7003	X-060Q431018	RCA JACK	AV3-19DS-1
J8001	X-060Q421019	RCA JACK	AV1-15DS-2

REF. NO.	PART NO.	DESCRIPTION	
		JACKS	
J8002	X-060Q421022	RCA JACK	AV1-15DS-4
J8003	X-060Q421021	RCA JACK	AV1-15DS-3
		SWITCHES	
SW117	X-0504201T31	SWITCH,TACT	SKHVBED010
SW118	X-0504201T31	SWITCH,TACT	SKHVBED010
SW119	X-0504201T31	SWITCH,TACT	SKHVBED010
SW120	X-0504201T31	SWITCH,TACT	SKHVBED010
SW751	X-0504201T31	SWITCH,TACT	SKHVBED010
SW752	X-0504201T31	SWITCH,TACT	SKHVBED010
SW753	X-0504201T31	SWITCH,TACT	SKHVBED010
SW754	X-0504201T31	SWITCH,TACT	SKHVBED010
SW755	X-0504201T31	SWITCH,TACT	SKHVBED010
SW756	X-0504201T31	SWITCH,TACT	SKHVBED010
		VARIABLE RESISTORS	
VR502	X-V1163Q2BTC	VOLUME,SEMI FIXED	EVNCYAA03BQ2
		MISCELLANEOUS	
B301	X-024HT03564	CORE,BEADS	W4BRH3.5X6X1
B502	X-024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B504	X-024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B505	X-024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B1001	X-024XC36002	CORE,BEADS	N2012ZP600T25
B4001	X-024XC36002	CORE,BEADS	N2012ZP600T25
B4002	X-024XC36002	CORE,BEADS	N2012ZP600T25
B7001	X-024HT03564	CORE,BEADS	W4BRH3.5X6X1
B7003	X-024HT03564	CORE,BEADS	W4BRH3.5X6X1
B7004	X-024HT03564	CORE,BEADS	W4BRH3.5X6X1
B8501	X-024XC36002	CORE,BEADS	N2012ZP600T25
B8502	X-024XC36002	CORE,BEADS	N2012ZP600T25
B8503	X-024XC36002	CORE,BEADS	N2012ZP600T25
B8505	X-024XC36002	CORE,BEADS	N2012ZP600T25
BT001	X-141L003010	BATTERY,MANGAN	R6P(AR)XICI
BT002	X-141L003010	BATTERY,MANGAN	R6P(AR)XICI
CD301	X-06CU123801	CORD CONNECTOR	CU123801
CD302	X-06CU123801	CORD CONNECTOR	CU123801
CD401	X-06CU013201	CORD CONNECTOR	CU013201
CD402	X-06CU010901	CORD CONNECTOR	CU010901
CD403	X-06CU013501	CORD CONNECTOR	CU013501
⚠ CD501	X-1207414907	CORD AC BUSH	07414907
CD502	X-06CH01408A	CORD EIS CONNECTOR	CH01408A
CD751	X-122S062101	CORD JUMPER	2S062101
CD801	X-06CP83035A	CORD CONNECTOR	CP83035A
CD803	X-122Y054501	CORD JUMPER	2Y054501
CD810	X-122E0B3501	CORD JUMPER	2E0B3501
CD811	X-06CU264201	CORD CONNECTOR	CU264201
CD820	X-122Y0C3501	CORD JUMPER	2Y0C3501
CD850	X-122Y056801	CORD JUMPER	2Y056801
CF201	X-1011T4R517	FILTER,CERAMIC	EFCT4R5MW5
CF202	X-1011T4R504	FILTER,CERAMIC	EFCT4R5YS5A
CF203	X-1022T45R72	FILTER,SAW	SAF45MFY220ZR
CF204	X-1012T04702	FILTER,CERAMIC TRAP	MKT47.3MC110P-TF
CP101	X-0697260650	CONNECTOR PCB SIDE	TKC-M06X-A1
CP104	X-069J760029	CONNECTOR PCB SIDE	IMSA-9604S-06Z14
CP301	X-069W120029	CONNECTOR PCB SIDE	TID-X02P-M1
CP302	X-069W120029	CONNECTOR PCB SIDE	TID-X02P-M1
CP401	X-069X460029	CONNECTOR PCB SIDE	B06B-DVS
CP403	X-069W01001A	CONNECTOR PCB SIDE	003P-2100
⚠ CP502	X-069W420029	CONNECTOR PCB SIDE	TV-50P-02-A1
CP506	X-069W01001A	CONNECTOR PCB SIDE	003P-2100
CP507	X-069W01001A	CONNECTOR PCB SIDE	003P-2100
CP751	X-069J760019	CONNECTOR PCB SIDE	IMSA-9604S-06Z13
CP801	X-069W330018	CONNECTOR PCB SIDE	TS-80P-03-V1
CP807	X-069W010010	CONNECTOR PCB SIDE	005P-2100
CP811	X-069S260629	CONNECTOR PCB SIDE	A2001WV2-6P
CD4001	X-122S0Q0901	CORD JUMPER	2S0Q0901
CD4002	X-122S0G0901	CORD JUMPER	2S0G0901
CD8001	X-122S0I0101	CORD JUMPER	2S0I0101
CD8002	X-122S0I0101	CORD JUMPER	2S0I0101
CP4001	X-069JVQ0180	CONNECTOR PCB SIDE	IMSA-9615S-26C-P
CP4002	X-069JVG0180	CONNECTOR PCB SIDE	IMSA-9615S-16C-P
CP8001	X-0694290139	CONNECTOR PCB SIDE	173979-9
CP8002	X-069J7I0029	CONNECTOR PCB SIDE	IMSA-9604S-18Z14

ELECTRICAL REPLACEMENT PARTS LIST

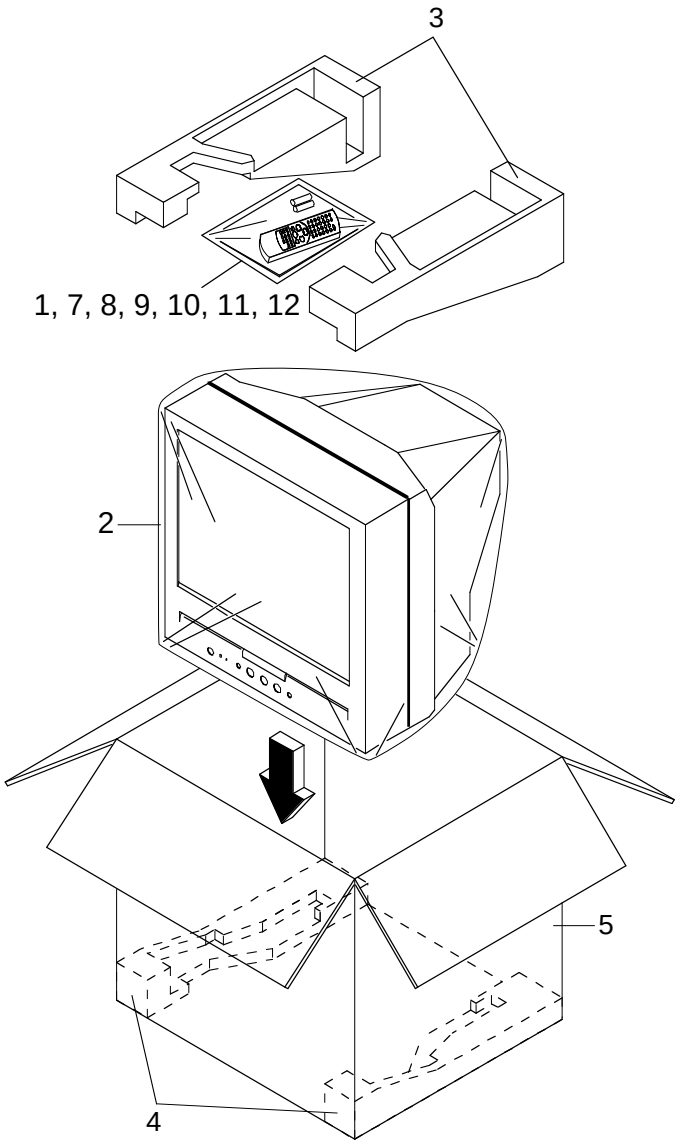
REF. NO.	PART NO.	DESCRIPTION	
		MISCELLANEOUS	
	CP8001	X-069J7I0029	CONNECTOR PCB SIDE IMSA-9604S-18Z14
	CP8004	X-067R011019	WIRE HOLDER 51048-1110
	CP8005	X-067R012019	WIRE HOLDER 51048-1210
	CP8006	X-067R005019	WIRE HOLDER 51048-0510
	CP803	X-067R105019	WIRE HOLDER 51052-0500
	CP803	X-067R105019	WIRE HOLDER 51052-0500
	CP810	X-069R2B0589	CONNECTOR PCB SIDE 52147-1110
	CP820	X-069R2C0589	CONNECTOR PCB SIDE 52147-1210
	CP850	X-069J7I0029	CONNECTOR PCB SIDE IMSA-9604S-18Z14
	CP850	X-069J7I0029	CONNECTOR PCB SIDE IMSA-9604S-18Z14
	CP850	X-069R250589	CONNECTOR PCB SIDE 52147-0510
	EL001	X-124116281A	EYE LET XRY16X28BD
	EL002	X-124120301A	EYE LET XRY20X30BD
⚠	F501	X-081PC6R304	FUSE 51MS063LCC
⚠	F502	X-081PC2R504	FUSE 51MS025LCC
⚠	FB401	X-043221017R	TRANSFORMER,FLYBACK 3221017R
	FH501	X-06710T0006	HOLDER,FUSE EYF-52BC
	FH502	X-06710T0006	HOLDER,FUSE EYF-52BC
	FH503	X-06710T0006	HOLDER,FUSE EYF-52BC
	FH504	X-06710T0006	HOLDER,FUSE EYF-52BC
⚠	ICP501	X-0835C04003	MICRO FUSE 20N_4000FS
⚠	ICP502	X-0835C04003	MICRO FUSE 20N_4000FS
⚠	ICP504	X-0835C04003	MICRO FUSE 20N_4000FS
	OS751	X-077Q000019	REMOTE RECEIVER PIC-28143TC5
⚠	RY501	X-0560V20115	RELAY ALKS321
⚠	SP351	X-070W546003	SPEAKER MSF-18D5SB05-02
⚠	SP352	X-070W546003	SPEAKER MSF-18D5SB05-02
⚠	TH501	X-DF5EL3R0A0	DEGAUSS ELEMENT ZPB45BL3R0A
⚠	TU001	X-0145K00055	.... TECC1040PG32D
⚠	V801	X-098W210428	CRT W/DY A51LSH196X10(O)
	X101	X-1002T01606	CERAMIC OSCILLATOR CSTLS16M0X53-A0
	X601	X-100CT3R505	CRYSTAL HC-49/C
	X1001	X-100CT01210	CRYSTAL HC-49/U
	X4001	X-100DA02706	CRYSTAL AT-49

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR



ACCESSORY REPLACEMENT PARTS LIST

REF. NO	PART NO.	DESCRIPTION
1	RM-C394G	TRANSMITTER
2	X-791WHA0085	LAMIFILM,BAG
3	X-792WHA0315	PACKAGE,TOP
4	X-792WHA0316	PACKAGE,BOTTOM
5	X-793WCD1340	GIFT BOX
6	X-A58702R975	INSTRUCTION BOOK KIT
7	X-JB5KD500	POLYBAG
8	X-J5500112	GUARANTEE CARD
9	X-J5500115	SERVICE STATION LIST
10	X-J5500117	REGISTRATION CARD
11	X-J5501202	GUARANTEE CARD
12	X-J5870201	INSTRUCTION BOOK

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